

## CHAPTER SIX

# Agriculture and Food Security Sectors in the oPt

**Section One: Palestinian Agriculture Sector**

*Prepared By: Nader Hrimat, Poppy Hardee*

**Section Two: Rights to Food Security in the oPt**

*Prepared By: Roubina Ghattas*

## Chapter Six: Agriculture and Food Security Sectors in the oPt

### 6.1 Palestinian Agriculture Sector

#### 1. Agricultural Rights' in the occupied Palestinian territory (oPt)

##### Main Human Rights' issues surrounding agricultural affairs in the occupied Palestinian territory (oPt):

##### Occupation practices and agro-human rights:

Israeli annexing of agricultural lands through the construction on the segregation wall may violate basic rights' (i.e. the right to adequate standard of living, right to equal treatment (equality), right not to have property arbitrarily taken) whilst violating many other rights/protocols (i.e. the right not to have lands taken by occupying forces, land rights, property rights). Here are some examples of rights' abuses occurring in the oPt, relating to the agricultural and 'informal labour force' sectors:

- A) *Israel's illegal annexing* of agricultural lands through measures such establishment of the Segregation wall, confiscation of lands under military orders for the purposes of training areas, settlement building etc (ARIJ, 2009)
- B) *Poor water availability* and water sector management, creating numerous difficulties for the lives of agricultural workers; e.g. poor irrigation services, poor waste management, difficulties in farming of non-arable lands (World Bank, 2009).
- c) *Environmental degradation* of agricultural lands, low percentage of arable lands within the oPt, effects from over- farming, salinisation of lands etc (WPF/ARIJ, 2010).
- d) *'Informal workers' (non- registered) in agricultural labour*. Many agricultural workers are not officially registered as 'working' or as economically active; this mainly effecting female members of agricultural households who work without legal recognition. As 'informal workers' or 'unregistered worker,' these individuals are left vulnerable to having their labour rights violated.
- e) *The protection of Intellectual Property Rights (IPR's) and products of geographical indication (GIS's)* (Raysman et al, 2008)
- f) *Food security* (protection of small farms, protection against rising costs of agricultural inputs) (WPF/ARIJ, 2010).

In turn the relevant rights' treaties/international conventions pertaining to the aforementioned dilemmas shall be presented.

**A) Israel’s illegal confiscation of land-** Violates the following rights’:

- **Article 49 of the Fourth Geneva Convention of 1949;** “The Occupying Power shall not deport or transfer parts of its own civilian population into the territory it occupies<sup>70</sup>.”
- **Universal Declaration of Human Rights (UDHR) Article 13 (1);** “Everyone has the right to freedom of movement and residence within the borders of each state.<sup>71</sup>”
- **UDHR Article 17(1);** “Everyone has the right to own property alone as well as in association with others.” (2) “No one shall be arbitrarily deprived of his property.<sup>72</sup>”
- **UDHR Article 25 (1);** “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.<sup>73</sup>”

**B) Poor water availability** (politicisation of water denial by Israeli occupying powers) - Violates the following rights of agricultural workers:

- **International Covenant on Civil and Political Rights (ICCPR). Part I, Article I** All peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic co-operation, based upon the principle of mutual benefit, and international law. In no case may a people be deprived of its own means of subsistence.’
- **ICCPR, Part II Article 9:** “Everyone has the right to liberty and security of person.<sup>74</sup>”

<sup>70</sup> Full text available at: <http://www.icrc.org/ihl.nsf/COM/370-580001?OpenDocument>

<sup>71</sup> Available at: <http://www.un.org/en/documents/udhr/>

<sup>72</sup> Available at: <http://www.un.org/en/documents/udhr/>

<sup>73</sup> Available at: <http://www.un.org/en/documents/udhr/>

<sup>74</sup> The UN Human Rights Committee issued its findings against Israel at the conclusion of its 99th session, held in Geneva from 12-30 July 2010. It discovered that; Israel’s denial of access to water and sanitation constituted violations of the International Covenant on Civil and Political Rights (ICCPR), finding that in the case of Israel, they amounted to violations of the right to life and the right to equal protection under the law (available at: <http://www.ewash.org/en/?view=79YOcy0nNs3Du69tjVnyyumIu1jfxPKNuunzXkRpKQN7Upd8TQTG>).

- **UDHR. Article 7;** “All are equal before the law and are entitled without any discrimination to equal protection of the law.”<sup>75</sup>

### C) **Environmental Degradation:**

As of yet the existence or acceptance of ‘environmental rights’ are still a hotly debated issue in rights’ discourse. For the majority of those who support the notion of environmental rights they are categorised as ‘substantive’ rather than inalienable human or natural rights, and they are definitely part of a developing rather than established rights’ tradition (Anton & Shelton, 2011). There are two basic conceptions of environmental human rights in the current human rights system. The first is that the right to a healthy or adequate environment is itself a human right (as seen in both Article 24 of the African Charter on Human and Peoples' Rights (ACHPR, 1979), and Article 11 of the San Salvador Protocol to the American Charter of Human Rights (OAS, 1988). The second conception is the idea that environmental human rights can be derived from other human rights, usually – the right to life, the right to health, the right to private family life and the right to property (among many others). This second theory enjoys much more widespread use in human rights courts around the world, as those rights are contained in many human rights documents.

**D) ‘Informal workers-’** are at risks of the following violations (given their unregistered status and falling under legal classification/ protection):

- **International Labour Organisation (ILO)<sup>76</sup> Convention 138;** (summarised version) sets minimum age of 15 for employment.
- **UDHR Article 4;** “No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.”<sup>77</sup>
- **UDHR Article 23 (all parts);**

(1) Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment.

(2) Everyone, without any discrimination, has the right to equal pay for equal work.

(3) Everyone who works has the right to just and favorable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

<sup>75</sup> <http://www.un.org/en/documents/udhr/>

<sup>76</sup> The International Labour Organisation (ILO) was established in 1919 and has since adopted 184 Conventions that establish standards for a range of workplace issues.

<sup>77</sup> This article would be applicable to any agricultural worker providing labour for minimal/no pay. This includes the wives or children of agricultural workers who give their labour for no financial gain.

(4) Everyone has the right to form and to join trade unions for the protection of his interests.

They are also at risk of having the following violated:

- Protection of minimum wage pay<sup>78</sup> (no global standard<sup>79</sup> but national measures in place<sup>80</sup>)-<sup>81</sup>
- Protection of the right to rest and holiday time (UDHR, Article 24 and ILO convention C101; Holidays with Pay (Agricultural) Convention and Palestinian Labour Law no 7 Section Five; Work Conditions and Atmosphere Article (67)<sup>82</sup> Violates BHR & OR.
- Protection of the right to work in a non-hazardous working environment (ILO convention C148; Working Environment Convention- 1977 and UHDR Article 23, sec III; Just and favourable working conditions<sup>83</sup>)

In addition, there are a number of specific conventions which cover rural/agricultural worker rights<sup>84</sup>:

- **ILO C141 Rural Workers' Organisations Convention, 1975** – although dated, forms the protection for much rights' protection across states and forms basis for international and national labour laws. This convention covers the right of all persons to develop organisation, cooperatives, utilise their land effectively, develop business etc.
- **Farmers' rights Food and Agriculture Organisation (FAO) Res. 5/89**- first conceptualised farmers' rights within a comprehensive treaty/resolution (to summarise, it recognizes land ownership, production rights, land ownership rights).

<sup>78</sup> Minimum wage law is the body of law which prohibits employers from hiring employees or workers for less than a given hourly, daily or monthly minimum wage. More than 90% of all countries have some kind of minimum wage legislation (ILO 2006: Minimum wages policy (PDF)

<sup>79</sup> As in no globally fixed or enforceable amount; however the ILO has created a number of mechanism to guide countries into producing some form of national policy of minimum wage; ILO has created Minimum Wage-Fixing Machinery Convention, 1928, Minimum Wage Fixing Machinery (Agriculture) Convention, 1951 and Minimum Wage Fixing Convention, 1970 as minimum wage law (available at: [www.ilo.org](http://www.ilo.org)).

<sup>80</sup> Palestinian National Authority Labour Law Article (56) 'According to the provisions of this law, the collective labor agreement must include the following items as a minimum; The minimum wage for all types of work' (Palestinian labour law: 2000, Labour Law no 7- available at: [http://ahmadbarak.com/UserImages/File/labour\\_law.pdf](http://ahmadbarak.com/UserImages/File/labour_law.pdf))

<sup>81</sup> Could be seen as a violation of basic human right against slavery (Article 4 UDHR) if wage was considered very minimal or non-existent.

<sup>82</sup> Actual working hours are 45 hours per week to be distributed over six days.

<sup>83</sup> 'Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.'

<sup>84</sup> This often covers specific provisions for rest and leisure time, safety operating agricultural equipment, child labour and seasonal workers rights.

A further rights' issue concerning many (although it is stressed not all) workers in the agricultural sector comes from their status as 'informal workers' meaning that they invade statistical classification, often their conditions of work are unknown about, they may be child labourers or unpaid wives of agricultural families. Informal labour defined can be defined as:

'Part of a labour economy that is not taxed, monitored by any form of government, or included in any gross national product (GNP), unlike the formal economy' (Portes & Holler, 2005). Part of the very problem of this group of workers comes from their status as 'informal workers' and their invasion of the law and/or statistical classification.

### **Protection of Female Agricultural Workers:**

In accordance with its multi-year programme of work (2010-2014), the 56th session of the **Commission on the Status of Women (CSW)** in 2012 will consider 'The empowerment of rural women and their role in poverty and hunger eradication, development and current challenges' as its priority theme. This expert committee considers looks at women's issues, existing international policy and its effectiveness.

**Convention of the Elimination of all forms of Discrimination Against Women (CEDAW)** (1979) - is the only international human rights treaty with a specific article dedicated to the situation of rural women. It calls on States Parties to take all appropriate measures to eliminate discrimination against rural women in a number of areas;

#### ***Article 1 (parts I and II):***

'States Parties shall take into account the particular problems faced by rural women and the significant roles which rural women play in the economic survival of their families, including their work in the non-monetized sectors of the economy, and shall take all appropriate measures to ensure the application of the provisions of the present Convention to women in rural areas, and to (summarised)'

(e) To organize self-help groups and co-operatives in order to obtain equal access to economic opportunities through employment or self-employment;

(g) To have access to agricultural credit and loans, marketing facilities, appropriate technology and equal treatment in land and agrarian reform as well as in land resettlement schemes.

## **Land ownership for the intention of agricultural purposes:**

### **UDHR's (1948) Article 17:**

‘Everyone has the right to own property alone as well as in association with others... No one shall be arbitrarily deprived of his property.’

These two important principles should protect the rights of Palestinians to own land and use it for agricultural purposes and protect them from the arbitrary deprivation of his/her lands. However Israeli occupation has over many time periods in various ways denied Palestinians the protection of their lands, by arbitrarily taking and destroying Palestinian owned land. One way Israel has justified this under national law is through Law 125 which gives the military officers the discretion to declare certain areas closed military areas where people can only enter such an area by permit from the Israeli Army Chief of Staff (Nasser, 2009). In other cases however Israel has simply taken land by stealth or under the pretext of conflict/occupation. Furthermore, ‘many settlements are built on prime agricultural land confiscated from Palestinians, or over key water resources such as the Western Aquifer basin, springs and wells’ (Palestine Monitor, 2010).

### **Intellectual Property Rights (IPRs)/ Geographical Indications (GIs):**

Both IPRs and GIs are relevant issues to consider when opening discussion on agricultural rights’. Arguably most relevant to the Palestinian agricultural sector are GI which pertain to a (copyright) sign used on goods that have a specific geographical origin and possess qualities, reputation or characteristics that are essentially attributable to that origin. Related to this is an appellation of origin (AO), which is a special kind of GI. GIs and AO’s are protected under international laws and conventions, such as<sup>85</sup>:

- I) **Trade Related Aspects of Intellectual Property Rights (TRIPS)-** 1994. Is an international agreement administered by the World Trade Organization (WTO) that sets down minimum standards for many forms of intellectual property (IP) regulation as applied to nationals of other WTO Members<sup>86</sup>.
- II) **Lisbon Agreement for the Protection of Appellations of Origin and Their International Registration** (*revised 1967*)- *part of an* establishment of a Special Union under Article 19 of the Paris Convention for the Protection of Industrial Property (1883). Attempted to regulate geographical indications. Some aspects of it have been superseded by the Agreement on Trade-Related Aspects of Intellectual Property Rights.

<sup>85</sup> It is noted that the World Intellectual Property Organisation (WIPO) regulated 24 leading treaties on international property and patent rights.

<sup>86</sup> TRIPS Art. 1(3).

## **2. Institutional, Strategic and Legal Status, and Developmental Strategic Planning of the Agriculture Sector in the oPt:**

Since its creation, the Palestinian National Authority (PNA) has focused to establish an active Ministry of Agriculture (MoA), due to the economic, social and political importance of this sector. The administration and technical structures of the Ministry were developed to meet the challenges in building an independent Palestinian State. Therefore, since its establishment the MoA has realized the importance of creating a developmental strategy for the agricultural sector. In 1999, the first integrated strategy for sustainable agricultural development in the Palestinian territory was formulated to cover a 5-10 year time scale.

The overall goal of Palestinian agricultural policy in the 1999 developed strategy was, “to achieve a modern agriculture that responds to the needs of local and foreign markets and to be competitive in terms of quality and price” through:

- The optimal exploitation of agricultural resources, particularly land and water, based on economic viability and efficiency and social equity, to ensure their sustainability, preserve the environment, and to contribute to achieving food security;
- The development of Palestinian rural areas through an integrated rural development approach, where agriculture constitutes its backbone;
- Improving competitiveness of agricultural production in both local and foreign markets;
- Enabling the private sector to act freely and to contribute to rural and agricultural development;
- Strengthening the institutional structure and legislative framework of the agriculture sector and to develop human resources to enable more efficient service delivery.

It is clear that the MoA’s goal is to assist the private sector to focus on comparative and competitive advantage in domestic and foreign markets in order to achieve maximum benefit from resource exploitation (MoA, 2000).

In the year 2000 the second Intifada broke out, creating many challenges for the Palestinian agricultural sector. For that reason, the MoA and other stakeholders insisted to shift their developmental-based strategies to meet emergency and relief needs to assist in reducing the resultant food insecurity.

Following that, the policies and plans prepared by the MoA have focused on coping strategies rather than on developmental and sustainable approaches. They focused more on crisis management and damages mitigation. Additionally, they didn’t plans and policies develop based on previous ones but each plan was developed as a new strategy; meaning the approach lacks cohesiveness and consistency

In 2004, the MoA prepared the agricultural Medium Term Development Plan (MTDP) for the years 2005-2007. This addressed the need to focus on food insecurity and food safety as priorities to confront the created food and agricultural crisis in an efficient and proper way (MoA, 2004). The revision process for the sector developmental plans occurred during one of the worst political periods due to the harsh occupation practices against human and natural resources. The defined sector constraints include:

- i. Restricted access to land resources,
- ii. Water scarcity and limited access to the Palestinian water resources for irrigation
- iii. Restrictions imposed on agricultural goods
- iv. Trade and non-tariff barriers (e.g. lack of authority on borders, restrictions to the access to international markets)
- v. Restrictions imposed on people movement, and;
- vi. Direct damages occurred by occupation to agricultural infrastructure.

The MTDP defined other constraints to the sector, including; low and irregular precipitation, limited availability of land resources and their fragmentation, deterioration of natural resources (including lands, range lands and water), competition over the use of water between domestic use and irrigation, and increased competition in regional and international markets facing traditional Palestinian products.

Different priorities for interventions (assumptions) were addressed including:

- i. Food security- improvement of productivity and competitiveness in the agricultural sector and support to rural households' economies,
- ii. Resources- land reclamation, rangeland rehabilitation, and water saving and harvesting,
- iii. Fisheries, seed and seedlings security,
- iv. Infrastructure services- rehabilitation of agricultural infrastructure and resources,
- v. Markets- including the development of agricultural market information system,
- vi. MoA capacity building (institutional reform MoA and MTDP implementation, monitoring and assessment), and;
- vii. Food safety (food control, agriculture environmental preservation.

To meet the proposed proprieties, a set of 20 project profiles were prepared with a total budget of 52,482,000 USD for the period 2005 -2007. The MTDP identified the executive bodies for MTDP implementation which include; research institutions, Palestinian civil society, international agencies and donors, the national Palestinian Authority, private sector, and agricultural NGOs.

In 2007, the PNA, under the supervision of the Ministry of Planning has prepared the Palestinian Reform and Development Plan (PRDP) for the years 2008 and 2010. This plan was developed in a participatory approach by each sector including the agricultural division. The plan was built through considering various elements of the Palestinian national policy which deal with safety and security, good governance, increased national prosperity, and enhancing life quality. Through this plan resources were allocated according to the national policy priorities and expenditure designed over midterm frameworks. This plan has focused on encouraging private sector investment to assist in improving the Palestinian economy and reduce dependency on funding resources. Accordingly, the agriculture sector was re-named as ‘agriculture and agro-industries.’ According to the PRDP, the agricultural sector is classified as a critical productive sector which has typically contributed to approximately 10% of national GDP, 20% of exports and 15% of total employment. The PRDP has highlighted the major contribution of the agriculture sector to food security; the main exports made by this sector were olives and olive oil, cut flower, fruit and vegetables. (PNA, 2007)

The PRDP has further linked the high potential of the agricultural sector’s contribution to the national economy to the improvement in political situation where access to natural resources and rights will be improved, occupation constraints eliminated and business models can be expanded so that export development will occur. The existing physical and administrative barriers imposed by occupation are powerful inhibitor to the sector growth. Additionally it is worth noting that the closure of borders is affecting agricultural exportation activities and leaving thousands of families without incomes. The PRDP has highlighted the needs of agricultural sector for financing, technical assistance, and developing good infrastructure to modernize and hence develop its potential to compete.

The PRDP has focused on agribusiness development to promote cultivations of higher value added cash crops. This will enhance exports to regional and global markets, however, fragmented local production, highly competitive and demanding global markets, and susceptibility to closures and delays in movement of goods, make achieving growth in this sector particularly challenging.

The total recruited budget by MoA through PRDP was \$ 21million for the year 2008 to cover the following strategic objectives:

- i. Provide a supportive environment to facilitate development in agriculture (\$ 1.5 million),
- ii. Facilitate the sustainable use of agricultural land in order to ensure food security and to support economic growth (\$ 11million),
- iii. Facilitate the processing and manufacturing of agricultural products to increase economic growth (\$ 0.5million) and;
- iv. Mitigate the impacts of conflict and natural disasters on agricultural growth (\$ 8 million).

Finally, the PRDP has allocated for agricultural sector \$ 18 million, \$ 24 million and \$ 24 million for the years 2008, 2009, and 2010, respectively. This budget was

allocated based on the Authority's resources and the possible ceiling of available funding resources (both internally and externally).

Unfortunately, the PRDP has focused on agribusinesses which only minimally mentions food security issues and subsistence agriculture/ how to protect small farmers. It was a business oriented plan with the primary objective of restoring economic growth and planned outcomes to increase contribution of the agricultural business to national income.

In April 2011, the PNA issued the National Development Plan for the years 2011-2013 with main vision "Establishing the State and Building our Future". This is considered as the second phase of the PRDP. NDP was developed with wider involvement and participation from different stakeholders and it witnessed the development of 23 sector strategies. The NDP was very ambitious plan and designed based on clear independence, sovereignty and open borders as essential elements for the sustainable social and economic development of Palestine. Therefore, the PNA has built this on the principles of human, natural and physical resources, getting back its rights, reaching a peace agreement with the Israeli Government and strong and continuous support from other countries. It further incorporates the investment of private and public sectors to create a strong economy and transform Palestine into strong and prosperous state. Future Palestine shall be characterized as a modern, democratic and well governed state. Priority policies under the administrative development sector strategy are focus on the following elements:

- i. To provide national security and public safety throughout the country,
- ii. To deliver justice and the rule of law for all citizens,
- iii. To modernize and streamline public administration,
- iv. To empower local government and bring public services closer to citizens,
- v. To attain independent financial independent and economic stability,
- vi. To promote Palestinian's sovereign presence in the international community,
- vii. To ensure a positive investment environment in Palestine,
- viii. To enhance the competitiveness of Palestinian products and services,
- ix. To promote economic integration and access to external markets,
- x. To ensure a vibrant labor market and combat unemployment,
- xi. To strengthen consumer protection institutions,
- xii. To develop integrated and sustainable national infrastructure networks,
- xiii. To secure Palestine's supply of energy and natural resources,
- xiv. To protect the environment in Palestine,
- xv. To ensure the long-term quality, affordability and safety of infrastructure systems, and
- xvi. To ensure adequate, safe and affordable housing (PNA, 2011)

Based on NDP, the planned national development expenditure, the agriculture and rural development sector was allocated for the years 2011, 2012 and 2013 are \$34.2, \$60.7, and \$83.0 million respectively.

Fortunately, the PNA through this new development plan has started recognizing the importance of the agriculture sector in the national economy as a key driver of economic growth and major contributor to food security; as for the first time the

budget allocated for agricultural sector increased significantly. Additionally, the plan has linked the development of the agricultural sector with national rural development, which is an important approach towards the integration of agricultural sector as a main economic activity within rural communities. This will encourage investment in the agricultural sector and reduces the vulnerability of rural communities whilst simultaneously encouraging the young labor force to stay in rural areas (avoiding forced urban migration). The development plan has linked agriculture and rural development with generated employment and an increase in food security for marginalized communities, for workers who lost their jobs in Israel and those who refused work in the Israeli settlements. Accordingly, the allocated budget for agriculture and rural development was distributed amongst the following interventions: Institutional reform, land reclamation, rehabilitation and forestation, irrigation and water resources management, agricultural insurance, micro-financing and legal services, support the marginalized communities and settlement workers.

The Development Plan for the years 2011-2013 was developed based on the integration of the PRDP and the developed agriculture sector strategy “a shared vision” 2011 – 2013. The agro-strategy was built with the participation of different stakeholders including social, governmental and Community-Based Organizations (CBOs) bodies (MoA, 2010)

A series of specialized workshops on governorate and decision makers’ level were conducted and through which different subsectors matters were discussed and analyzed. The subsectors were; plant production, animal production, natural resources and agricultural services. The first draft was discussed and reviewed with a specialized committee including representatives from Palestinian NGOs and other stakeholders. The final version of the strategy was prepared and issued by the Ministry of agriculture (MoA, 2010).

The MoA has develop an integrated vision for this strategy which focuses on “Sustainable and feasible agriculture, that is capable of achieving food security, competitive in the local and foreign markets through an optimal use of resources as part of comprehensive development, and cementing the bonds and sovereignty of Palestinians over their land, there on towards building the state” (MoA, 2010).

Through the New Strategy, the MoA addressed the required special commitments of the consecutive governments, and relevant stakeholders to provide certain foundations for realizing and sustaining the vision which include the following:

- 1) Overcoming the problems resulting from the occupation and enable the Palestinians’ to exercise control over their resources.
- 2) Treat the agricultural sector equitably and pay special attention to it.
- 3) The responsibilities and tasks of developing the agricultural sector are shared, integrated and coordinated, within a clear frame of roles and responsibilities amongst its public, civil and private sector institutions in content of transparency, accountability and integrity
- 4) The Palestinian agricultural sector mostly relies on small-scale farmers, government bodies and civil society organizations should give high priority to farmers’ associations, cooperatives and boards.

5) Optimally utilize and sustain the available resources, and stress the importance of halting the depletion and the over use of the available resources especially the ground water and range lands, as well as limit the effects and impact of desertification and climate change.

6) Improve the capability of agricultural sector to attract investments through providing incentives, proper legislations, collateral services and assurances needed to promote the private sector investments, and;

7) Consolidate the presence of Palestinian agricultural expertise and competences on the regional and international levels.

The strategy was built on revising and analyzing the status of agricultural sector, challenges, strengths, weakness, threats, and opportunities for its different main components. Additionally, it analyses the role, the effectiveness and manner of involvement of each stakeholder. Furthermore, the strategy has analyzed previous strategies and sectoral plans and made a comparison for improvement. Finally, the strategy was focused on developing the sector, taking in to consideration subsistence agriculture, small farmers and vulnerable groups. This has provided a positive approach to protect the right of these marginalized activities and groups. Finally, it focuses on developing the agricultural sector and its resources with main priority being on the agribusiness sector. Based on its shared vision the strategy asked all the stakeholders to revise their performance, commitments, and plans to meet the strategy objectives, and developmental plans.

The developed agriculture strategy document contained an executive summary, and five chapters covered the introduction to the shared vision for development of agricultural sector, future visions which help in defining and setting the framework for the agricultural development in Palestine. It also provides an analysis of the agricultural sector's status including problems, obstacles facing the sector and a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, agricultural strategic objectives and priorities, responsibilities, addressed the strategy monitoring and evaluation mechanisms, including the expected achievements end their measurement tools.

The agriculture strategy has the main goal of increasing the self-sufficiency of the agricultural sector whilst increasing local agricultural products by 5% and raising the overall value of the agricultural sector to over USD 1 billion. This will be achieved by increasing the value of agricultural exports to \$USD 60 million and providing 50,000 jobs through increased water irrigation availability for farming by 60 million cubic meters and reclaiming 5000 dunums of land.

Accordingly, the MoA has estimated the total costs of the Strategy as USD 1,502,267 billion. These are allocated to 50 interventions are located under 19 policies of 7 strategic objectives. These will be funded by the PNA Public Budget, donors and the private sector (MoA, 2010).

It is worth mentioning that the agriculture Law was approved by the Palestinian Legislative Council in the year 2003. The agricultural Law contains several chapters (PLC, 2003): The law covered the following agricultural issues:

Plant agricultural resources; Agriculture ownership; The protection of agricultural lands and soil conservation; Forests and afforestation; Rangelands; Agriculture fertilizers; Genetic Resources and seeds, seedlings, tubers and etc. production; Nurseries organization; fruit trees; Plant Protection; Agricultural pest protection; Agricultural pesticides; Agriculture quarantine; Agricultural water; Livestock and domestic animals; Livestock resources organization and development; Feeds; livestock farms and apiary; Controlling the lives stock diseases; Veterinary quarantine; Slaughter houses; Fish resources; Agricultural inputs and products; Sanctions and Final judgments.

Several annexes were developed in the following year until 2010 to solve some issues not included the Agricultural Law. The Agriculture Law has covered most of the agricultural issues, but it needs to be more detailed and to integrate all followed annexes into one integrated solid law. Additionally, sanctions should be clearer.

### **3. Agricultural Resources:**

#### **Agricultural Land:**

##### **Agricultural holding size:**

Based on the PCBS and MoA agricultural survey conducted in the year 2010, there are 111,310 agricultural holdings in oPt (81.7% in the West bank and 18.3% in Gaza Strip) of which 79,175 (71.1%) are plant holdings and the remaining are livestock holdings. Compared to the year 2005, the number we found that the number of agricultural holdings increase in the year 2010 by 10,138 holdings, this mainly due to the land heritage system in Palestine. Up to 29% of the agricultural holders aged 40-49 years old (PCBS & MoA, 2011)

The survey has resulted in calculating a total area of agricultural lands in the oPt as 1,207,061 dunums, of which 1,105,146 dunums in the West Bank and 101,915 dunums in Gaza Strip. This refers to the type of the survey which was based mainly on certain definition for the size of the agricultural holding and also for the physical agricultural areas not seasonal areas (they have registered only the land more than half dunums as agricultural holding for irrigated lands and those with area equal one dunum and more are rainfed holding). Compared to the year 2008 the total agricultural area was 1.854 million dunums. Compared this however to ARIJ, GIS-RS, 2011 analysis for agricultural areas in the year 2010, showed that the total agricultural areas in the West Bank is 2,150,800 dunums (ARIJ, 2011). This difference in areas is due to the fact that PCBS and MoA had surveyed the actual agricultural lands and dismiss the fragmented small size agricultural lands which are dominated in the urban areas and in certain areas where springs are located. Also, this showed high percentage of small and fragmented ownership in Palestine where it is being cultivated by families. This means additional 1,045,654 dunums of small land ownerships could be added to the PCBS and MoA official agriculture survey of the year 2010.

**Agriculture water resources for irrigation:**

Water available for agriculture amounts to 150 million cubic metres (mcm) per year, and constitutes 45% of the total water used to distribute to 70 mcm in the West Bank, and 80 mcm in the Gaza Strip. Ground water wells are the main water source for irrigation in the Gaza Strip. In the West Bank, irrigation water is supplied by groundwater wells and springs, and Israel confiscates 82% of Palestinian ground water in the West Bank. The largest ground water resources in the West Bank are concentrated in the Jordan Valley area (MoA, 2010). Based on the World Bank report, which was issued in the year 2009, if the Israeli restrictions on water resources removed and additional provision of additional water quantities occurs this will increase agricultural sector's contribution to the Gross Domestic Product (GDP) by 10% and will create approximately 110,000 additional job opportunities (World Bank, 2009).

Currently, Irrigated agriculture covers about 12% of cultivated land in the oPt and uses about two thirds of Palestinian water resources and contributes gross output of about \$500 million annually. Overall, agriculture contributes 25% of exports, and the sector is the third largest employer: formal employment in the sector in 2005 was estimated at 117,000 people (World Bank, 2009).

Due to over pumping of ground water in Gaza Strip, water quality reduced significantly which led to a significant effect on agricultural yield. Additionally, the destruction of about 370 agricultural wells by the Israeli aggressions on the Gaza Strip also affects the quality and quantity of pumped water. Furthermore, the closure of the borders causes significant losses for agricultural sector. Thus, the quality of water become so low due to the over pumping and cause water salinization.

Despite the scarcity in water resources in oPt, the available resources are not efficiently used due to the over irrigation and existing old damaged irrigation networks. Also, the investments in wastewater treatment have been blocked due to limited financing resources and restrictions imposed by the occupation on establishing wastewater treatments, especially in area C.

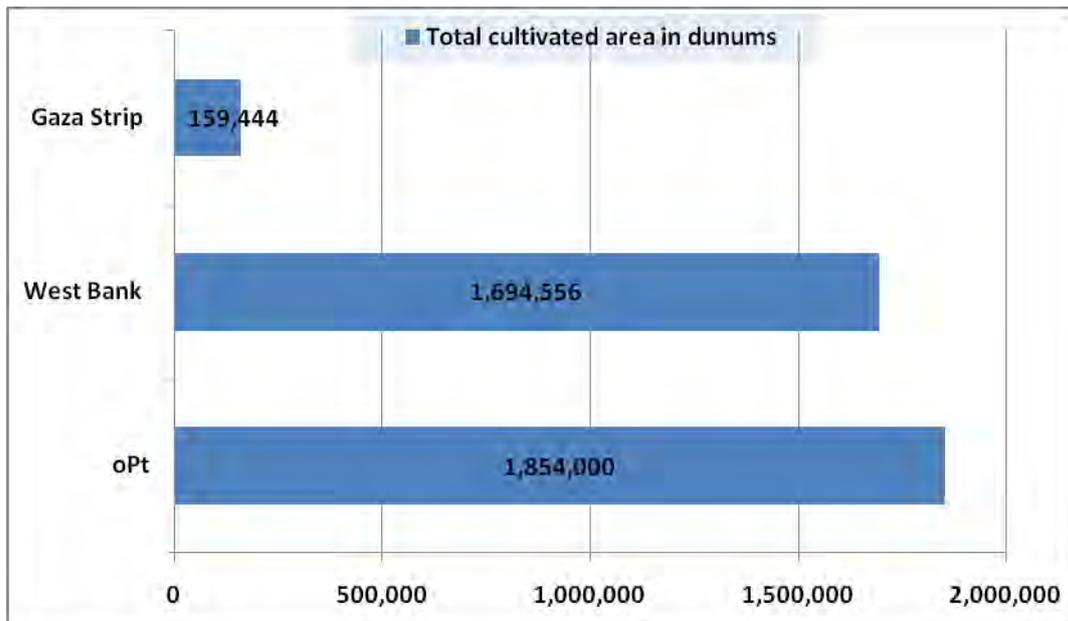
**4. Agriculture Production**

Based on the Palestinian Central Bureau of Statistics (PCBS) agricultural yearly report of the agricultural production for the agricultural year 2007/2008 (PCBS, 2008), the total cultivated area was estimated at 1.854 million dunums which forms 31% of the Palestinian territory area, out of which 91% is in the West Bank and 9% in Gaza Strip. The rain-fed area constitutes 86% while the irrigated area constitutes 14% of the total cultivated land (56% of the irrigated area is located in Gaza Strip and 44% in the West Bank). The rangeland amounts to 2.02 million dunums. However, the area accessible for grazing is only 621 thousand dunums (only 30.7% of the Palestinian rangeland). UP to 62.9% of the Palestinian arable lands are located in Area C, while 18.8% are located in area B and only 18.8% are located in area A. This means that most of the Palestinian agricultural lands are exposed to the occupation obstacles and aggression and threatened to be damaged or confiscated by the occupation. Furthermore, almost 184,899 dunums of arable land, permanent cultivations, green

houses are being isolated by the Western part of the Segregation Wall which causing approximately USD 62 million losses a year to the agricultural sector.

The diversified eco-systems of Palestine give it the uniqueness to diversify its produced crops as well as the production calendar. Currently up to 105 main crop types are cultivated, including; 38 types of fruit trees and 37 types of vegetable crops, and 30 types of field crops and grain in addition to the different types of cut flowers. Olives, citrus fruits, grapes and plums represent the leading fruit crops. As most of cultivated areas are under rainfed conditions, the production is usually affected by rain season based on the distribution and total precipitation as well as on the summer season. The past year witnessed low levels in total precipitation and the historical average annual rainfall and bad distribution, in addition to high temperatures. This has affected rain-fed crops especially field crops as the total production reduced by 35-40% and many of farmers in the marginal areas didn't even manage to get seeds form their planted crops. On the other hand, thousands of the growing grapes vines and recently planted vines became wilted and died; especially in Hebron and Bethlehem Governorates, where 78% of the grape of the oPt are concentrated, due to drought and low rainfall. Furthermore, the olive production this year reduced by 15% of its historical average. In addition, this year, wilted olive fruit started appearing for the first time which the sign of significant drought. Accordingly the plant production size is usually affected by weather conditions, even irrigated agricultural, which might be affected by high temperatures and the prevailing of storm wind and frost (ARIJ, 2011a).

The PCBS agricultural statistic for the year 2007/2008 showed that the total cultivated area in the oPt was 1,854 thousand dunums (See Figure 6.1.1). The largest area was the fruit trees forming 63.2%, followed by field crops with 26.7% and vegetables with 10.1% of the total cultivated areas in the oPt.



**Figure 6.1.1: Distribution of Agricultural areas in the growing season 2007/2008 by Territory**

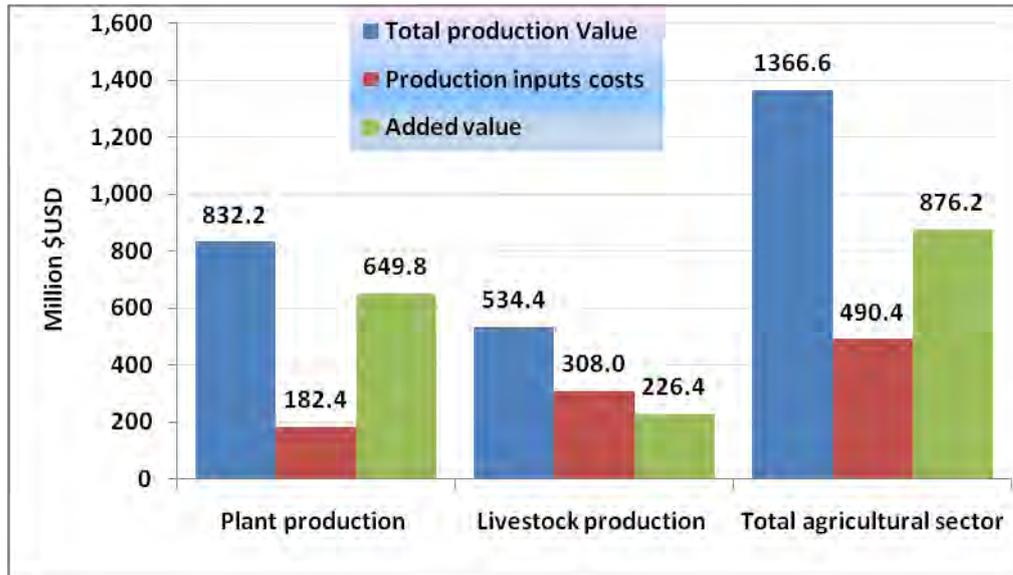
Source: PCBS, 2009

Irrigated agriculture is dominated in Gaza Strip and forms 72% of the cultivated areas there, while rain-fed agriculture area is dominated in the West Bank and occupies 91.3% of the cultivated area there. Regarding the livestock sector, statistics showed there are 32,986 heads of cattle, 688,899 heads of sheep, 322,082 heads of goats, 27,682 thousand broiler poultry, 2,695 thousand laying poultry, 66,733 beehives and the amount of cached fish from Gaza Sea was 2,844 tons.

Olive trees area is dominated among the planted fruit crops with 81.1% of the total fruit trees cultivated area, while 75.5% of the vegetables area is located in the West Bank while 24.8% of the vegetables area located in Gaza Strip. The total area of the protected vegetables reached 45.3 thousand dunums and forming about 24.3% of the total vegetables area in the oPt. The main growing vegetables are cucumber, squash and tomato respectively. Regarding the field crops cultivations, the total cultivated area with field crops in the year 2007/2008 reached 495.9 thousand dunums. Wheat is the main planted crop and covers 46.3% of the field crops area in the oPt followed by barley with 21.7%.

### **Contribution of the Agricultural Sector in the Palestinian economy**

The total value of the agriculture production in the oPt, for the agricultural year 2007/2008, reached 1,366.6 million \$USD divided between 60.9% for plant production (44.4% from West Bank and 16.5% from Gaza Strip) and 39.1% for livestock production (31.2% from West Bank and 7.9% from Gaza strip). The total production cost reached 490.4 million \$USD of which 37.2% for plant production and 62.8% for livestock production. The highest costs of agro-production inputs are feed 46.0% followed by fertilizers with 9.6%, veterinary medicines with 7.7%, pesticide with 7.3% and water and electricity with 7.0%. Accordingly, the total added value for the agricultural sector reached 876.2 million \$USD distributed between 71.2% in the West Bank and 28.8% in Gaza Strip with a total contribution of 649.8 million \$USD by plant production sector (74.2%) and 226.4 million \$USD contributed by the livestock sector (25.8%). Of the total value of plant production in the oPt vegetables production including cut flower formed 55.6% followed by fruit trees production which contributed with 31.7%, then field crops which contributed with 12.7%, respectively. On the other hand, the total value of the livestock production in the oPt constituted of meat production with 55.2%, followed by milk and dairy products with 29.5%, then eggs with 11.1% followed with others which equal to 4.2% (Figure 6.1.2).



**Figure 6.1.2: Distribution of total production value, cost and added value by agricultural subsector**

Source: PCBS, 2009

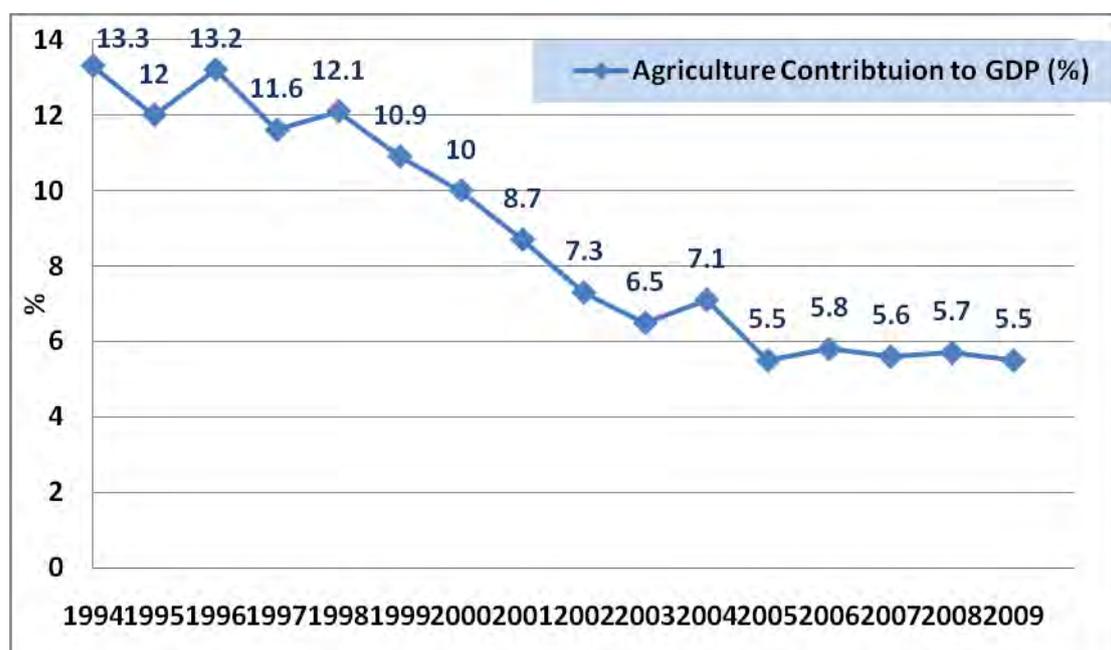
The Agriculture sector is vital for the Palestinian economy as it is the main sector that supports the Palestinian people, especially during in stabilized political conditions where restrictions on closure and movement are usually imposed on the Palestinian people. At least it provides these affected people with food and some income to reduce the impact of crisis on their lives including access to food. The value contribution of agricultural sector to the Palestinian GDP remained varied between 387.9 and 588.7 million \$USD in the years 2000-2007 with exception of the year 2008 where it was at 876,181 million \$USD. Also, the contribution of the agricultural sector compared to other sectors to the national economy has started decreasing from 12.1% of the total GDP in the oPt in the year 1998 to 5.5 in the year 2009 (Figure 6.1.3).

This showed that the growth in the agricultural sector is very limited and the allocated support by the Palestinian authority and donors is limited compared to other sectors. Also, restrictions imposed by the occupation on the agricultural sector include; restrictions to the exportation of agricultural commodities from Gaza, limitations of farmers access to lands in the West Bank, in addition to the destruction of agricultural infrastructure through bulldozing the greenhouses, uprooting trees and agricultural lands, land confiscation and taking most of the water resources. On the other hand, the impact of natural crisis such as drought, low rainfall, frost and storm winds. Furthermore, more than 80% of the agricultural activities are family based cultivations, where many of the family members are working as informal workers and their economic contributions don't included national economic resources. All these factors are affecting the development of the Palestinian agricultural sector and its contribution to the national economy. It is important to mention that these shocks and limitations are directly affecting small and medium sized Palestinian farmers.

In 2007, the agricultural sector had contributed to 16.1% of the total employment in Palestine, with a total number of 103 thousand workers, whilst later in 2008; the employment in agriculture was estimated at 14.2%. In the years 2008 and 2009 the

labor force in agricultural sector formed 15.7% and 14.2% in the West Bank and 10.7% and 6.4% of the Gaza Strip total labor force, respectively. Furthermore, the agricultural products formed about 23% of the total exported products from Palestine in the year 2007. In addition to the high number of informal employed workers, especially women. It is worth mentioning, that 42% of the Palestinians in the West bank and 17% in Gaza strip have been earning from the agricultural sector are a major supplementary income (MoA, 2009a)

Agricultural inputs are one of the sensitive factors affecting the feasibility and the sustainability of the agricultural sector as their prices keep increasing. For example, the expenses increased in the year 2009 at a rate of 5.7% from the previous year.



**Figure 6.1.3: Agricultural sector contribution to the total Palestinian GDP (1994-2009)**  
Source: PCBS, 2010

The Agriculture Strategy for the years 2011-2013 has developed a long term developmental Strategy objective through with its principal goal to increase self-sufficiency through increasing local agricultural products by overall value to over USD 1 billion. According to the strategy, this goal will be achieved by increasing the value of agricultural exports to USD 60 million and providing additional 50,000 jobs through increased water irrigation availability for farming by 60 million cubic meters and reclaiming 5,000 dunums of land. The question is how to achieve such an optimistic plan as the occupation still continues its practices and aggressions on the Palestinian lands, farmers, water, access and movement.

More than forty years of Israeli occupation, combined with internal, regional, and international political developments have affected the Palestinian socioeconomic conditions. The recent internal Palestinian conflict has created tensions and complicities inside the Palestinian socio-political contents and has affected it negatively, thus creating problems towards facing the continuous Israeli aggressions on the Palestinian people, land and resources and it weakened the international support to the Palestinian people and rights. Additionally this conflict has given the

Israelis the pretext to impose more restrictions on the Gaza strip and it blockaded and completely closed the Gaza Strip borders since June 2007 which collapsed the formal economy of Gaza. More than half of the households in Gaza are food insecure and almost 80% of the households are receiving relief support. Despite the fact that agricultural activities have somehow assisted in reducing the humanitarian problems in the Gaza Strip, but now we found the coastal people become imports fish from Israel and through tunnels under the Gaza-Egypt border due to the limited access imposed by Israeli military to the Gaza Sea shore which prevent the 3500 families from catching fish and leaving them threatened to become without food and income (FOA, 2011)

### **Employment in the Agricultural Sector**

Furthermore, since 2000, the labor force in the oPt has faced several obstacles and the unemployment rates have increased significantly. Accordingly, the participation rates are low as in the in the 2nd quarter of 2011, 45.3 % of Palestinian people in the West Bank and 38.1% in Gaza are participating in the labor force. That means 1.048 million persons in the 2nd quarter of 2011 are participating in the labor force: 711 thousand in the West Bank and 337 thousand in the Gaza Strip. On the other hand, the unemployment rate among labor force participants was 18.7% in the oPt. Accordingly, the number of unemployed persons was 195 thousand in the 2nd quarter 2011: 109 thousand in the West Bank and 86 thousand in the Gaza Strip. Thus, the unemployment rate in the Gaza Strip was 25.6% compared with 15.4% in the West Bank (PCBS, 2011).

About the women status in the labor force in the oPt, we found that the participation rate for males was 68.8% compared to 16.2% for females while the unemployment rate for males was 16.4% compared to 28.6% for females. This showed that the participation of women in the formal labor force is limited with higher rates of unemployment rates compared to the males. This showed that gender equality and women empowerment should be one of the strategic planning in the oPt on civil society and public levels. The statistics of the year 2010 showed that women depend more on agriculture for employment, as 21.4% of working women were active in this sector, compared to only 9% of working men (PCBS, 2011).

The importance of agriculture in Palestine as food producer for the Palestinian people and it has its economic privacy as it is providing work for more than 39% of those working in informal sectors and providing a crucial income support and assist in food security of the small farming families through their subsistence agriculture. Women only compose 16.2% of the labor force in Palestine and 21.4% of them contribute to the agricultural sector actively (as formal workers). Most of women's labor in the informal sector remains uncalculated or considered and thus their contribution to the agricultural home-based activities is much higher than what is officially reported. Based on the World Bank report, over 30% of informal agricultural work in the oPt is performed by women as part of their domestic responsibilities (FAO, 2011). On the other hand, women earn only 65% of men's wages in the West Bank and 77% in the Gaza Strip (MAS Monitor 2011).

Furthermore, the recent agricultural survey conducted by the PCBS and MoA for the year 2010 showed there were 292,031 employees in agricultural holdings (livestock and Plants) in the oPt of which 94.6% are unpaid family members and only 5.4% permanent employees during the agricultural year 2009/2010. This fact reflects the reality of the Palestinian agricultural sector as a family based sector where most of its activities are subsistence activities while the agro-business activities are limited. This is consistent with what has been mentioned in the agriculture sector review in 2007 which was done by ARIJ with the support of the Spanish cooperation, as it showed that 75.6% of the plant cultivations and 8.3% livestock holdings are producing mainly for household consumption while only 17.9% of plant production activities and 24.4% livestock activities are pure agribusiness (direct from sale) (ARIJ & Spanish Cooperation, 2007).

#### **Contribution of Agricultural production in food self-sufficiency:**

Local agricultural production achieves self-sufficiency in many vegetables (including: tomato, cucumber, eggplant, squash, beans, cabbage, cauliflower), while only some fruit production (including: olives, grapes and plums), poultry and eggs. By contrast, the self-sufficiency of red meat does not exceed 75% and of the milk and dairy production doesn't cover more than 70% of actual consumption, whilst 85-90% of the wheat requirement is imported, depending on actual rainfall each year. In the case of livestock concentrates, only some 5% of that used in Palestine are produced locally (MoA, 2009). One of the main targets mentioned by MoA recent strategy was "Safeguarding food security, in both qualitative and quantitative terms, and targeting the accomplishment of self-sufficiency in regard of local livestock and plant products", and "To increase the ratio of self-sufficiency of local agricultural products by 5% by the end of 2013".

#### **Funding the Agricultural Sector:**

It is worth mentioning that the allocated budgets by government and/or donors for the agricultural sector are very limited and do not respond to the real needs of this vital sector. For example, of the total expenditures in all sectors, donors have spent less than 1% in support of the Palestinian agricultural sector. Even through the 'Consolidated Appeal Process (CAP)', the agricultural sector didn't manage to get more than 22% (\$USD 8.8 million) of the sector's appealed budget for the year 2010. Furthermore, there are 1409 employees working in the Ministry, its budget amounted to 72 million NIS in 2008, the share of the development budget did not exceed 10% of the total budget (MoA, 2010).

### **5. Obstacles facing the Agricultural Sector**

The agricultural sector faces several obstacles and limitations which affect its development and improvement. The main obstacle is the occupation practices: with the agricultural sector being the main targeted sector by Israeli occupation. Since 1967 more than 2.5 million trees have been uprooted since 1967 (with an estimated value of 55.3 million USD); the continuous blockade of Gaza has had a marked impact on agricultural activities; inaccessibility to the rangelands; impose restrictions on the movement of agricultural commodities, inputs and restriction of farmers' access to

their lands. Furthermore, land confiscation, the damaging of agricultural infrastructure and facilities; controlling the movement of agro-commodities between the Palestinian areas and abroad; fighting the Palestinian farmers through filling the Palestinian markets with Israeli commodities while the Palestinian agro-production in its peak; controlling water resources and taking up to 82% of Palestinian ground water; supporting the settlements products to compete and affect the Palestinian agriculture; isolating the Palestinian land by the segregation wall (184,899 dunums of agricultural lands are isolated by the Segregation wall); and limiting fisherman's access to the Gaza Sea all gravely affect the agricultural sector.

Gaza's Farmers have been unable to recover from the continuous Israeli Attacks (especially, the Cast Led War on Gaza) and closure, the agricultural employees reduced by 60% in Gaza and the loss of the agricultural sector reached USD 180 million in one year as direct damages to agricultural assets.

Other constraints on the agricultural sector include; the land fragmentation which has reduced the feasibility of agricultural holdings; poor planning, resources management and optimization of natural resources; over use of agricultural chemicals; lack of applied agro-research; poor extension services; poor cooperation among different stakeholders; very poor funding for such important sector (1% of donors fund and 7% of the government budget). In addition no clear and feasible production calendar exists; demand-supply chain is not in existence, agro-production-marketing databases are not formulated; food bill studies about self-sufficiency and gape in food production are not assessed etc. Furthermore, the adoption of new technologies is limited and poor; the blockage of Gaza is killing the agricultural sector, especially the agri-business activities; over grazing due to limited access to the rangelands is prevalent, there is a current lack support to the agricultural informal labor force which comprises the major labor in this sector; and the role of agro-women is neglected and the focus on developing the role of women in agricultural sector is minor. Furthermore, the natural crisis, especially the drought, low rainfall, low water resources, wind storm and frost are affecting the status of the agricultural sector; the absence of the national crisis funding box to compensate the farmers for their losses.

## **Recommendations for Development**

To develop the Palestinian agricultural sector several actions, procedures and steps should be taken on the ground to make a difference and create a sustainable and developmental agricultural sector, starting from planning level. The Palestinian Governmental bodies should give more attention and support to the agricultural sector through not only developing good frameworks, and strategies but also backing these up with a real commitment to transfer them into reality. In addition, due to the continuous constraints and restrictions imposed by the Israeli occupation on this important sector and its farmers, the government should give its priority to protect this sector by using its connections to international agencies and foreign friend countries to give more support to protect the Palestinian agriculture and to encourage donors to give priority to support this sector. Furthermore, an increase in the currently allocated budget for this sector is required and creating a national crisis compensation financial-box is a must. Furthermore, protecting small farmers and supporting their subsistence

agriculture and protecting the agro-products of small farmers; empowering rural women; encouraging agricultural research and the adoption of feasible technologies; creating a national database and information system about agro-production-consumption balances; creating a feasible agro-production calendar; improving the marketing and exportation systems; and revising the currently signed agro-agreements and replacing them with more feasible ones. On national level, providing suitable agro-infrastructure; establishing agro-support industries; and protecting Palestinian agro-genetic resources. On marketing level, increasing the added value of the Palestinians agro-products locally and abroad; and controlling the entrance of Israeli agro-commodities to the Palestinian markets especially those are produced in Palestine. Finally, Cooperation among different stakeholders should be empowered and to become more efficient to avoid duplication and maximize the benefit of farmers and the sector.

## 6.2 Rights to Food Security in the oPt

### 1. Background

Food is one of the most basic needs for human survival and access to it is a human right (Smith & Subandoro, 2007). Adequate food provision is recognized as an essential component in both individual human and national/international development, being set out as the first of the eight Millennium Development Goals (MDGs); ‘eradicate extreme poverty and hunger (UNDP, 2011). Access to food and the maintenance of an adequate nutritional status, on the other hand, are critical determinants of people’s survival. It is estimated that more than a billion people, one in every six human beings, may be suffering from under-nourishment (FAO/WFP, 2009a).

Under-nutrition is a serious public health problem and amongst the lead causes of deaths worldwide, whether it is directly or indirectly. The causes of under-nutrition are complex. The immediate causes of under-nutrition are disease and/or inadequate food intake, which result from underlying poverty, household food insecurity, inadequate care practices at household or community levels, poor water, hygiene and sanitation, and insufficient access to healthcare. Disasters or conflicts all directly affect the underlying causes of under-nutrition (The Sphere Project, 2011). The vulnerability of a household or community determines its ability to cope with exposure to these shocks. The ability to manage the associated risks is determined largely by the characteristics of a household or community, particularly its assets and the coping and livelihood strategies it pursues (The Sphere Project, 2011).

Food security, on the other hand, exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Within this definition of food security, there are three components:

- **Availability.** This refers to the quantity, quality and seasonality of the food supply in the disaster-affected area. It includes local sources of production (agriculture, livestock, fisheries, wild foods) and foods imported by traders (government and agencies’ interventions can affect availability). Local markets able to deliver food to people are major determinants of availability.
- **Access.** Refers to the capacity of a household to safely procure sufficient food to satisfy the nutritional needs of all its members. It measures the household’s ability to acquire available food through a combination of home production and stocks, purchases, barter, gifts, borrowing or food, cash and/or voucher transfers.
- **Utilization.** Refers to a household’s use of the food to which it has access, including storage, processing and preparation, and distribution within the household. It is also an individual’s ability to absorb and metabolize nutrients, which can be affected by disease and malnutrition. (The Sphere Project, 2011).

Exposure to food insecurity risks is determined by the frequency and severity of natural and man-made shocks and by their socio-economic and geographical scope (The Sphere Project, 2011). The determinants of coping capacity include the levels of a household’s financial, human, physical, social, natural and political assets; the levels

of its production, income and consumption; and its ability to diversify its income sources and consumption to mitigate the effects of the risks.

The rise in food prices in 2007-2008, followed by the financial and economic crisis in 2009, has heightened awareness on poverty and hunger issues around the world. The food crisis brought into sharp focus the stark realities confronting the global food production system and has negatively impacted the hunger and malnutrition targets of MDG1, as well as their likely repercussions with regard to other MDGs, (especially 4 and 5), and actions needed to mitigate these effects. The largest increases in hunger have come in countries at lower levels of economic development that are net importers of basic foodstuffs. The increasing reliance of developing countries on food imports is part of a structural change in world agricultural production and trade (Henk and Cullen, 2010).

Since 2000, rising food prices have contributed to increasing the number of food insecure people from 857 million to 1.02 billion in 2009, reversing slow but consistent progress in reducing the world's hungry (FAO/WFP, 2009a). Although the Food Price Index has declined in international markets, the United Nations Food and Agriculture Organization (FAO) and World Food Programme (WFP) have noted that 22 countries are in a protracted crisis, a situation characterized by recurrent natural disasters or conflicts, which cause a breakdown of livelihoods. The world will need to produce 70% more food between now and 2050 to satisfy the demand of a population of just over 9 billion people (FAO/WFP, 2009a). The most severe cases of food insecurity are occurring in the Arab world. It is currently estimated that over 31 million Arabs are classified as hungry; this being almost 10% of the population (Karam, 2010). Studies by FAO show that the Arab world imports over 50% of its caloric imports every year and this gap is expected to increase substantially at least until 2030. The Arab countries are the largest net importers of cereal in the world; even greater than Asia<sup>87</sup>(Karam, 2010). In addition, Arab countries under political conflict are the ones of most severe food insecurity status, for example, 33% of the Palestinian people are suffering from food insecurity (WFP/FAO/PCBS, 2011), as a result of several underlying reasons.

Such trends in natural and human-induced crisis confirm the large increase in protracted emergency situations, whereby several countries experience a food emergency year after year. Meeting immediate food emergency needs has become the main priority of donors with nearly 80% of total food aid now used for that purpose, compared with well below 20% up to 1990. At the same time donors' funding arrangements have become more flexible with a large majority of donors providing cash resources to facilitate local purchases and triangular transactions, as well as funds for the purchase of agricultural inputs. While support for the agriculture and food security sectors within the United Nations Consolidated Appeals Process (CAP) have increased in recent years, both agriculture and food security remain heavily underfunded in relation to identified needs and other sectors; with only 41% of the agriculture sector's needs being met in recent years. Overall, Food and Agriculture Organization's (FAO) and World Food Program (WFP) efforts in rehabilitation and

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<sup>87</sup> Arab countries imported around 60 million metric tons of cereal during the year 2008. (Ghassan, 2010).

recovery of the agriculture and food security sectors have been compromised by a lack of adequate funding (Konandreas, 2010).

All the above aspects and others have initiated global movements to ensure food security and rights to food at national level. Accordingly, this chapter is going to investigate the issue of food security and its relation to human rights and rights to food from both a legal and practical point of view. It shall further consider these issues at national and international levels to result in an understanding concerning the past, current and future actions to enhance food security highlighting food security status, dilemmas, coping strategies and solutions in the occupied Palestinian territory (oPt).

## 2. International Food Security Actions

Everyone has the right to food and food security. This right is recognized in international legal instruments and includes the right to be free from hunger. When individuals or groups are unable, for reasons beyond their control, to enjoy the right to adequate food, food and nutrition security by the means at their disposal, states have the obligation to ensure that right directly. The right to food implies the following obligations for states:

- ‘To respect existing access to adequate food’ requires states parties not to take any measure that results in the prevention of such access.
- ‘To protect’ requires measures by the state to ensure that enterprises or individuals do not deprive individuals of access to adequate food.
- ‘To fulfil’ (facilitate) means that states must proactively engage in activities intended to strengthen people’s access to and utilization of resources and means to ensure their livelihoods, including food security (The Sphere Project, 2011).

Realizing the right to food should be part and parcel of rights based approaches to development, which aim to implement all human rights obligations which states have committed themselves to under human rights law. International law recognizes that everyone has the fundamental right to be free from hunger. The human right to adequate food and food security<sup>88</sup> has been recognized in different international instruments, most notably the following conventions and summits.

### 2.1 Food Summits and Conventions:

#### *The Universal Declaration of Human Rights, 1948:*

The first draft of the Declaration was proposed in September 1948 with over 50 Member States participating in the final drafting. By its resolution 217 A (III) of 10 December 1948, the General Assembly, meeting in Paris, adopted the Universal Declaration of Human Rights with eight nations abstaining from the vote but none

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<sup>88</sup> ‘Food security’ as a concept is younger than ‘the right to food’. The right to food had been recognized in Article 25 of the Universal Declaration of Human Rights (UDHR) in 1948 and is enshrined in Article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) of 1966. The concept of food security was developed in the 1970s. Yet, food security, and not the right to food, was the topic of public discourse for a few decades until the time was ripe for focusing on the individual and his or her rights.

dissenting. Article 25 recognizes the right to an adequate standard of living, including food. “*Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food ...*” *Article 25 (1)* (<http://www.un.org/en/documents/udhr/index.shtml>).

***Universal Declaration on the Eradication of Hunger and Malnutrition, 1974:***

Adopted on 1974 by the World Food Conference convened by the General Assembly of the United Nations and entrusted with developing ways and means whereby the international community as a whole could take specific action to resolve the world food problem within the broader context of development and international economic co-operation adopts the present Declaration. (<http://www.fao.org/righttofood/KC/downloads/vl/docs/AH396.pdf>)

***The International Covenant on Economic, Social and cultural Rights, 1976:***

Entered into force in the year 1976, in accordance with article 27. It was signed by 160 parties. Article 11 recognizes the right to an adequate standard of living, including adequate food, and the fundamental right to be free from hunger as a separate right. “*The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living ... including adequate food ...*” and agree to take appropriate steps to realize this right. *Article 11(1)*. (<http://www2.ohchr.org/english/law/cescr.htm>)

***Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), 1979:***

Adopted in 1979 by the UN General Assembly, is often described as an international bill of rights for women. It was signed by 186 parties. Consisting of a preamble and 30 articles, it defines what constitutes discrimination against women and sets up an agenda for national action to end such discrimination. States parties agree to take all appropriate measures, including legislation and temporary special measures, so that women can enjoy all their human rights and fundamental freedoms. The Convention is the only human rights treaty which affirms the reproductive rights of women and targets culture and tradition as influential forces shaping gender roles and family relations. The CEDAW recognizes in article 12 the right of pregnant and lactating women to special protection with regard to adequate nutrition and in article 14 the right of rural women to equal access to land, water, credit and other services, social security and adequate living conditions (<http://www.un.org/womenwatch/daw/cedaw/>)

***The Convention on the Rights of the Child (CRC), 1990***

The Convention on the Rights of the Child entered into force in the year 1990, having been signed by 193 States Parties. The CRC is the first legally binding international instrument to incorporate the full range of human rights; civil, cultural, economic, political and social. The Convention sets out the rights in 54 articles and two Optional Protocols. It spells out the basic human rights that children everywhere have: the right to survival; to develop to the fullest; to protection from harmful influences, abuse and exploitation; and to participate fully in family, cultural and social life. The Convention protects children's rights by setting standards in health care; education; and legal, civil and social services. Article 25 recognizes the right to the highest

attainable standard of health, and article 27 the right to an adequate standard of living which, in both articles, includes food and nutrition (<http://www2.ohchr.org/english/law/crc.htm>).

***The Grains Trade Convention, 1995:***

The Grains Trade Convention is the latest in a long series of multilateral cooperation instruments, in operation since 1949. It seeks to further international cooperation in grains trade; to promote expansion, openness and fairness in the grains sector; to contribute to grain market stability and to enhance world food security. These objectives are sought by improving market transparency through information-sharing, analysis and consultation on grain market and policy developments. The convention also establishes the IGC (International Grains Council) as an intergovernmental forum for cooperation in grains trade matters. (<http://www.igc.int/en/aboutus/default.aspx>).

***The World Food Summit, 1996:***

The World Food Summit took place in Rome in the year 1996, with representatives from 185 countries and the European Community. The Summit brought together close to 10,000 participants, and provided a forum for debate on the imperative of eradicating hunger. It reaffirmed the right to everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger. It helped to influence public opinion and provided a framework for bringing about important changes in policies and programs needed to achieve Food for All. The objective of the Summit was to renew global commitment at the highest political level to eliminate hunger and malnutrition, and to achieve sustainable food security for all people. It has also set the political, conceptual and technical blueprint for an ongoing effort to eradicate hunger in all countries with the target of reducing by half the number of undernourished people by no later than the year 2015. The Rome Declaration sets forth five commitments (Box 1) which lay the basis for achieving sustainable food security for all and the Plan of Action spells out the objectives and actions relevant for practical implementation of these seven commitments. ([http://www.fao.org/wfs/index\\_en.htm](http://www.fao.org/wfs/index_en.htm)).

***The Food Aid Convention (FAC), 1999:***

The Food Aid Convention is the latest in a long series of multilateral cooperation instruments, since 1967. It is administered by the food Aid Committee, using the services of the Secretary of International Grains Council (IGC). The objective of the convention is to contribute to world food and to improve the ability of international community to respond to emergency food situations and other food developing

**Box 1**

**The Five Rome Principles for Sustainable Global Food Security**

- Invest in country-owned plans aimed at channeling resources to well-designed and results-based programs and partnerships.
- Foster strategic coordination at national, regional and global levels to improve governance, promote better allocation of resources, avoid duplication of efforts and identify response gaps.
- Strive for a comprehensive twin-track approach to food security that consists of direct action to immediately tackle hunger of the most vulnerable, medium and long term sustainable agricultural, food security, nutrition and rural development programs to eliminate the root causes of hunger and poverty.
- Ensure a strong role for the multilateral system by sustained improvements in efficiency, responsiveness, coordination and effectiveness of multilateral institutions.
- Ensure sustained and substantial commitment by all partners to investment in agriculture and food security and nutrition with provision of necessary resources in a timely and reliable fashion, aimed at multi-year plans and programs. (*World Summit on Food Security Bulletin, 2009*)

countries. FAC members make quality food aid available to developing countries with the greatest need predictable basis, irrespective of fluctuation in world food prices and supplies. Food aid was only specified to be provided when it is the most effective and appropriate means of assistance, should be based on evaluation of needs by the recipient and the members (<http://www.foodaidconvention.org>)

***The Millennium Summit, 2000:***

At the Millennium Summit in the year 2000 the largest gathering of world leaders in history adopted the UN Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets<sup>89</sup>, which have become known as the Millennium Development Goals (MDGs). The MDGs are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions-income poverty, hunger, disease, lack of adequate shelter, and exclusion-while promoting gender equality, education, and environmental sustainability. They are also basic human rights-the rights of each person on the planet to health, education, shelter, and security (<http://www.un.org/millenniumgoals/bkgd.shtml>).

***World Food Summit; five years later, 2002:***

FAO held in the year 2002 another world food summit to track progress made since the summit of 1996 and consider ways to accelerate these efforts. The summit called for an international alliance to accelerate action to reduce world hunger. It also unanimously adopted a declaration calling on the international community to fulfill an earlier pledge to cut the number of hungry people to about 400 million by 2015. It additionally called for an intergovernmental working group to develop voluntary guidelines to achieve the progressive realization of the right to food; reversing the overall decline of agriculture and rural development in the national budgets of developing countries, in assistance provided by developed countries. It further aimed for in lending by the international financing institutions; and considering voluntary contributions to the FAO Trust Fund on Food Safety and Food Security. The summit attended by delegations from 179 countries plus the European Commission including 73 heads of state or government or their deputies (<http://www.fao.org/worldfoodsummit/english/newsroom/news/8580-en.html>).

***World Summit on Food Security, 2009:***

The World food summit on Food Security took place in the year 2009 at the UN FAO Headquarters in Rome. The summit unanimously adopted a declaration pledging renewed commitment to eradicate hunger from the face of the earth sustainably and at the earliest date. The summit laid the foundations for diverse paths to a common objective, which is achieving food security at the individual, household, national at regional and global levels. Countries also agreed to work to reverse the decline in domestic and international funding for agriculture and promote new investment in the sector, to improve governance of global food issues in partnership with relevant stakeholders from the public and private sector and to fully realize the target of Millennium Development Goals (MDG) (mainly goal one). Each nation was asked to adopt a strategy consistent with its resources and capacities to achieve its individual goals and at the same time, to global issues of food security. The Declaration outlines

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<sup>89</sup> 2015

strategic objectives, commitments and actions and establishes the five Rome Principles for Sustainable Global Food Security (Box 1) (World Summit on Food Security Bulletin, 2009).

***Summit for the World's Regions on Food Security, 2010:***

The Summit was designed to achieve main objectives: on the basis of actual experiences, highlight the added value of the Regions in tackling hunger, develop cooperation activities between Regions from the North and Regions from the South and Financial Backers, provide recommendations to boost effective and innovative regional actions in the field of food security, make the voice of the Regions heard to promote their integration on the international stage (<http://www.wocan.org/events/view/summit-of-the-world-s-regions-on-food-security.html>).

***The 2010 MDG Summit:***

The 2010 MDG Summit concluded with the adoption of a global action plan; keeping the promise united to achieve the Millennium Development Goals, and the announcement of a number of initiatives against poverty, hunger and disease. In a major push to accelerate progress on women's and children's health, a number of Heads of State and Government from developed and developing countries, along with the private sector, foundations, international organizations, civil society and research organizations, pledged over \$40 billion in resources over the next five years (<http://www.un.org/millenniumgoals/bkgd.shtml>).

Most of the above summits that were set to determine the right to food and food security had a global substantial provision including:

1. Food is a unique human resource. Everyone has the fundamental right to be free from hunger.
2. Access to food with dignity is a basic condition for the physical, psychological and spiritual well-being and survival of the human species.
3. Free market structures are not sufficient to assure global food security; basic guarantees of individual access to food are needed. International cooperation and assistance may be necessary in order to implement such access in Low Income Food Deficit countries.
4. International initiatives which enhance global food security will significantly contribute to international peace and security and the reduction of civil unrest and strife.
5. Food may never be used as a weapon to gain political or military advantage either within a state or as an instrument of foreign policy.

## **2.2 Food Conferences and Meetings**

Of other legal instruments in the field of food and nutrition security and food adequacy is the following main conferences and meetings (Box 2):

***The World Food Conference, 1974:***

The United Nations World Food Conference was held at Rome, Italy, in the year 1974. At the Conference, governments examined the global problem of food production and consumption, and solemnly proclaimed that, "every man, woman and

child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties". The Conference had set as its goal the eradication of hunger, food insecurity and malnutrition within a decade. Up to 135 representatives of States participated, invited in accordance with the Economic and Social Council resolution (<http://www.un.org/en/development/devagenda/food.shtml>).

### ***International Conference on Nutrition, 1992:***

FAO and the World Health Organization (WHO) convened the first global conference devoted solely to addressing the world's nutrition problems, the International Conference on Nutrition (ICN), at FAO Headquarters in Rome in the year 1992. Representatives from 159 countries and the European Community, 15 United Nations organizations and 144 non-governmental organizations (NGOs) participated. State-of-the-art technical papers were prepared for the conference, and experts, policy-makers and planners from around the world participated in regional and national meetings. During August 1992, the Preparatory Committee Meeting held at WHO Headquarters in Geneva, government representatives considered the draft *World Declaration and Plan of Action for Nutrition*, which was finalized and adopted unanimously at the ICN later that year. During the ICN, governments pledged to make all efforts to eliminate or reduce substantially, before the next millennium, starvation and famine; widespread chronic hunger; under-nutrition, especially among children, women and the aged; micronutrient deficiencies, especially iron, iodine and vitamin A deficiencies; diet-related communicable and non-communicable diseases (<http://www.fao.org/docrep/V7700T/v7700t02.htm>).

### ***Sustainable Food Security for All by 2020:***

The 'International Conference on Sustainable Food Security for All by 2020,' was held during the year 2001 at the International Congress Center of the Federal Parliament, Bonn, Germany. The conference was organized by the International Food Policy Research Institute (IFPRI) and its 2020 Vision Initiative. Over 800 participants attended the meeting, including heads of state, government ministers and other senior officials, as well as representatives of academic and research institutions, United Nations bodies, intergovernmental organizations, business and industry, non-governmental organizations, and the media.

The conference aimed at bringing together key stakeholders to share their knowledge, exchange information and ideas, and move toward a consensus on identifying and implementing policies and actions needed to address the problem of food insecurity and possible methods to achieve food security in the most effective way. Discussions and conclusions from this meeting are

#### **Box 2**

##### **Other Legal Instruments in the Field of Food Security at Global Level –year 2011**

- Semi-annual meeting between UN agency heads and UN Secretary General (2011).
- Nineteenth Session of the Commission on sustainable Development (CSD 19) (2011).
- ECOSOC's Special meeting on the Global Food Crisis (2011).
- 2010 G8 Summit.
- International Conference on Asian Food Security (ICAFS) (2011).
- ICCAFFE 2011 International Conference, Morocco
- 4th McGill Conference on Global Food Security
- Global Food Security at the NFU conference 2011: sustainable healthy food for all.
- Global food security conference in Queensland, 2011
- World Conference on Sustainable Value Chain Agriculture for Food Security and Economic Development (2011).
- Bonn 2011 Conference: The Water, Energy, and Food Security, solutions for the Green Economy.

expected to promote and catalyze action to achieve the vision of food security for all by 2020 (<http://conferences.ifpri.org/2020Conference/>).

### 2.3 Food Bodies and Programs

There are several bodies and programs that work on organizing the legal aspect of food security, including *the Committee on World Food Security (CFS)*, which is the United Nations' forum for reviewing and following up on policies concerning global food security. It also examines issues which affect the world's food situation. It was established as a result of the food crisis of the 1970s, upon recommendation from the 1974 World Food Conference. In the 35<sup>th</sup> Session the members of CFS have agreed on a wide-ranging reform that aims to make CFS the foremost inclusive international and intergovernmental platform dealing with food security and nutrition and to be a central component in the evolving global partnership for agriculture, food security and nutrition. The CFS reforms are designed to focus the committee's vision and role on the global coordination of efforts to eliminate hunger and ensure food security for all (<http://www.fao.org/cfs/cfs-home/en/>).

#### *The SPFS (Special Program for Food Security)*

is another special program launched by FAO in the year 1994 and reaffirmed by the world food summits held in 1996 and 2002 to improve food security within poor households through National Programs for Food Security (NPFS) and Regional Programs for Food Security (RPFS).

*The global Forum on Food security and nutrition (FSN forum)* was also established by FAO's Agricultural Development Economics Division in 2007 to address the need for increased knowledge exchange in the food security and nutrition area. All programs are developed by the governments that participate (<http://www.fao.org/spfs/about-spfs/mission-spfs/en>). Several other agencies work on providing food assistance and development programs to alleviate food security at international and national levels. (See Box 3).

*The UN Millennium Project, Task Force on Hunger*, 2005 is another initiative to set out priority interventions for the world to address immediately in order to halve hunger by 2015 and it gives poor countries' governments guidelines to develop the necessary plans. The Millennium Project was commissioned by the United Nations Secretary-General in 2002 to recommend a concrete action plan for the world to reverse the grinding poverty, hunger and disease affecting billions of people. The Millennium Project continues operating in an advisory capacity proposes straight forward solutions for meeting the Millennium Development Goals by the year 2015 (<http://www.unmillenniumproject.org/who/index.htm>).

#### **Box 3**

**Development agencies and financing institutions that provide technical, financial and food assistance at global level include:**

- Food and Agriculture Organization of the United Nations (FAO)
- International Fund for Agricultural Development (IFAD)
- International Labour Organization (ILO)
- Office of the United Nations High Commissioner for Refugees (UNHCR)
- United Nations Children's Fund (UNICEF)
- United Nations Development Programme (UNDP)
- World Bank (WB)
- World Food Programme (WFP)
- World Health Organization (WHO)

### 3. Food Security National Legal Instruments

Following its formation in 1996, the Palestinian Legislative Council (PLC) began addressing the legal environment through the enactment of the Palestinian Basic Law, and with regards to the local government, the PLC has issued and amended many related laws and regulations such as the Local Government Law No. 1 of 1997 and the Elections Law of 1996. The enactment of these laws has illustrated the Palestinian National Authority's (PNA) understanding of the need to start a real transformation process in order to have a modern and an effective local government sector. Over more than twenty years, major donors have supported the reform of local governance, thus leading to the creation of a multitude of frameworks and strategic documents.

Accordingly, the PNA has implemented effective policies and ensured service delivery at national and local levels. The PNA is committed to combating poverty and to enable all Palestinians, men and women, to secure their sustainable means of living through productive work by undertaking decisive procedures (<http://www.mop-gov.ps>). The PNA have a pivotal role in shaping the context that paves the way to Palestinian growth and development through management of negotiations, issuance of legislations, allocation of budget, formulation of macro and sectoral policies and plans, institutional reform and development, management of foreign aid and channeling donors support. Partnerships and coordination at national and international levels are also ensured to fulfill its strategic objectives (see Box 4). The major Palestinian legislative instruments in relevance to food security and poverty are as following.

#### **Job Creation Strategy (2004)**

The strategy is developed by the job creation Program (JCP), established in July 1994 under the umbrella of the Palestinian Economic Council for Development and Reconstruction (PECDAR). At the beginning of 2001, JCP became an autonomous entity working directly under the PNA-President Office.

One of its main goals is: the effective and widespread involvement in the Palestinian development process after decades of occupation and intentionally destruction, improving the living conditions, through carrying out a series of various projects and programs at different sectors, and to alleviate severe poverty conditions, through adopting immediate projects characterized no longer with relief features, but also has developmental impacts like construction of schools, rehabilitation of roads and reservoirs, productive industries and food security programs that also characterized with intensive job creation programs simultaneously (<http://www.jcp.ps/strategy.htm>)

#### **National Poverty Report (2005)**

The report's aim is to enhance the analysis of poverty related issues in the occupied Palestinian territory (oPt), particularly given the dramatic increase in poverty rates over the past few years (see Figure 6.2.1). The Poverty Report is part of the Ministry of Planning's initiative to mainstream poverty-related issues through a joint project with UNDP/PAPP, funded by the United Kingdom's Department for International Development (DfID). The Pro-Poor Participatory Planning Project's aim is to inform policy makers, local communities and the international donor community on ways of incorporating poverty-related issues into their planning and advocating for greater

emphasis on the needs of the poor and into mainstreaming them into national development activities. The National Poverty Report covers a wide range of pertinent areas including analysis of existing socioeconomic conditions in the West Bank and Gaza Strip; a poverty map of the area, highlighting the impact of the crisis, and the impact of emergency assistance on the poor (UNDP, 2005).

### **National Food Security Strategy (NFSS) (2005)**

This strategy is the only Palestinian document that is specialized in addressing the issue of food security from a legal point of view at national level. It was prepared by Ministry of Planning and endorsed on the 15<sup>th</sup> of August 2005. It addresses the humanitarian crisis and social cost of incipient hunger and malnutrition and economic causes of food insecurity with the purpose for a sustainable and coordinated solution to food insecurity in the oPt (PNA-MoP, 2005). During the early stages of Strategy development in 2002, a stakeholder analysis was conducted, resulting in the formation of three Working Groups. These comprised umbrella group representatives from civil society and the private sector, and an Inter-Ministerial Working Group (IWG) from the PNA, with representatives at Director-General level or equivalent.

The Strategy document comprises a preamble, together with four charts. The preamble summarizes the nature of food insecurity in the country, its causes, extent and context, and close relationship with “poverty”. The charts represent the four strategic objectives agreed at the first workshop in Jericho. These relate to the three components of food security – improving the availability of food, access to food, and quality/use of food – together with a fourth chart addressing institutional aspects of Strategy implementation (PNA-MoP, 2005).

The Strategy is compatible with and promotes the four National Programs of the Draft MTDP (2005-07), the nutrition strategy, and the Job Creation Strategy. It is also compliant with the PNA’s poverty report.

### **Purpose of the Strategy**

- to provide the framework for a sustainable and coordinated “solution” to food insecurity in Palestine;
- to serve as the vehicle for implementing the PNA’s food security policy, whereby all its citizens would be food-secure;
- to provide a management tool for Government, enabling it to have a clear vision of what and how it intends to prioritize, and to oversee and coordinate the implementation of food security policy, not least through commanding the development agenda rather than merely responding to donor priorities;
- to demonstrate that clear vision to donors, thereby assuring their commitment, so that strategy implementation is properly resourced;
- to facilitate related multi-sectoral planning and implementation at Governorate and Municipality level, and provide a mandate against which potential projects can be assessed as worthy of funding;
- to encourage a development agenda, with a preventative rather than curative orientation, together with a better-coordinated safety net of food security-related relief efforts (PNA-MoP, 2005).

### **The Palestinian Reform and Development Plan (PRDP) 2008-2010**

The policy addressed thoroughly the poverty alleviation issue, where the causes and drivers behind poverty and issues to tackle poverty has been well presented. One of the policy goals is *“Increased national prosperity: economic security, stability, viability and self-reliance, achieved through an increase in sustainable employment and an equitable distribution of resources, leading to the reduction and eventual eradication of poverty and the growth of individual and national wealth”* (PNA, 2010a).

### **National Nutrition Policy for Palestine (2008-2010)**

This is the first National Nutrition Policy for Palestine. It provides a framework for understanding nutrition within Palestine and underpins the Nutrition strategy and Operational Plan of Action. It aims to contribute to consistency and coherence in response to nutritional needs and quality and effective response in nutrition programming.

The National Nutrition Policy focuses on eight priority areas including: identification of nutritional trends (nutritional surveillance) and underlying causes, Prevention and treatment of micronutrient malnutrition (micronutrient supplementation, food fortification and dietary diversification), prevention and treatment of obesity and dietary-related non-communicable diseases, protection, promotion and support for exclusive breastfeeding (up to 6 months), appropriate complementary feeding of infants and diet diversity for children, growth monitoring and promotion among children under 5 year, management of severe and moderate malnutrition, promote and ensure appropriate nutrition among school children, and improvement and protection of food quality and safety.

#### ***The main guiding principles for the National Nutrition Policy are as following:***

- *Everyone has the right to adequate health, food and freedom from hunger.*
- *Addressing poverty and food insecurity is the key to improve nutritional status.*
- *Nutrition is multi-faceted and is influenced by food, care and health as well as factors operating at a basic level in the political, economic and social environment.*
- *Interventions to address nutrition problems are only successful where they are based on inter- sectoral and coordinated action.*
- *A woman’s nutritional and health status is paramount to ensure the well-being of all family members.*
- *Strong social, economic and political commitment is essential to institutional sustainability to ensure the implantation of nutrition policy and strategy.* (PNA-MoH, 2008).

### **The Palestinian Early Recovery and Reconstruction Plan for Gaza (2009-2010)**

This plan has been prepared by the PNA’s Ministry of Planning with support from all line ministries, UN agencies, the EC, the World Bank and other partners. This plan used to consolidate resources and responses to help the Palestinian people in Gaza rebuild their lives and livelihoods, and as such form the basis for mobilizing resources and efforts at the international conference in Egypt on March 2009 and provide the guiding framework for all early recovery and reconstruction interventions.

The plan is the result of consultations and coordination with government institutions and numerous local and international partners, and it delineates responsibility for following up the planning and coordination processes in the implementation phase. The Early Recovery and Reconstruction Plan is explicitly linked to the key national policy priorities as outlined in the Palestinian Reform and Development Plan (PRDP), and consequently is complementary to the PNA's existing efforts to alleviate poverty through increasing employment and revitalizing the economy.

The Gaza Early Recovery Rapid Needs Assessment forms the backbone of the plan, underpinning both the early recovery projects and the medium-to- longer term reconstruction interventions. In order to address the needs of people in Gaza the plan worked in an integrated and coordinated way, early recovery priority interventions ensure that sectoral and sub-sectoral needs are considered in relation to each other. The plan documents for Gaza emergency and early recovery take into consideration the social sector, the social safety sector, education, primary health care, economy, agriculture, and food security, and governance.

***Early Recovery intervention: Agriculture and food Security:***

- Rehabilitate agricultural lands & irrigation networks
- Reconstruct and rehabilitate licensed wells & water pipelines, green houses, nurseries, animal shelters & fisheries
- Replenish livestock & beehives
- Reconstruct agricultural pools & rehabilitate agricultural roads
- Reconstruct & rehabilitate Ministry of Agriculture facilities
- Compensate farmers, including agricultural stores, equipment, & marketing infrastructure (PNA, 2010b).

**The Millennium Development Goals (MDGs): Statistical Report (2009)**

This statistical report is considered as a contribution from the Palestinian Central Bureau of Statistics (PCBS) to the national efforts for monitoring the progress so far achieved in the Millennium Development Goals (MDGs) in the Palestinian Territory. The preparation of this statistical report reflects the commitment of the PNA towards the Millennium Declaration of September 2000. After the declaration, the MDGs were one of the main determinants when preparing the developmental plans for Palestine. This report differs from the previous ones in that it presents the amended version of the MDGs which was adopted by the United Nations in January 2008.

This report assists the PNA in the orientation of planning towards a national developmental vision, customization and adoption of the MDGs, and improving national planning as a comprehensive monitoring system guides the planning process. It presents the progress achieved so far towards in the MDGs in Palestine using the available statistics from the PCBS as a time series. In addition, it attempts to identify the strengths and challenges facing the achievement of the MDGs, and to propose recommendations for achieving these goals by 2015. The annex at the end of the report summarizes the status of each goal in term of data availability and quality, and investigates the possibility of achieving the goals according to the current trends.

Goal 1 “*Eradicate Extreme poverty and Hunger*” as described from a Palestinian context reflects the high occurrence of poverty incidence in the oPt where serious and focused actions are needed to achieve poverty alleviation. Several recommendations were set in a Palestinian context including:

- Adoption of population policies by the government
- Developing a national strategy for fighting poverty, taking into account increasing the coverage of humanitarian assistance, and building the social security network.
- Developing plans to solve the unemployment problem
- Providing suitable infrastructure for education, health, transportation, energy, etc, and skilled cadre.
- Developing strategies for food security under exceptional situations (PCBS, 2009e).

An updated version of the Millennium Development Goals (MDGs) was developed by Ministry of Planning in August 2010 (PNA-MoPAD, 2010b).

### **Social Safety Net Reform (2010)**

Recently, the Ministry of Social Affairs (MoSA)<sup>90</sup> has initiated a process of reform of the current targeting mechanism that could free substantial resources to increase coverage among the poor. Given the extent of vulnerability, especially in Gaza, these reforms focus on minimizing errors of exclusion and determining the minimal level of support that is essential to cover basic needs; thereby increasing efficiency and potential coverage.

The Social Safety Net Reform Project has supported the PNA in developing and managing one of the most advanced cash assistance programs in the region. It is also designed to be expanded during crises if needed. The project, after merging with another initiative backed by the European Union (EU), has provided cash transfers to more than 63,000 poor families using an effective poverty-targeting mechanism and database. The Social Safety Net Reform Project focused simultaneously on capacity-building within MoSA to undertake necessary reforms and on providing cash assistance to the poorest households in West Bank and Gaza. The reform effort supported by the project, and led by the Ministry, established an effective poverty-targeting database, utilized the banking system to provide and to monitor cash transfer.

Cooperation between the World Bank and the European Union led the merger of two separate projects to create the Palestinian Cash Transfer Program, which is consistent with the 2005 Paris Declaration on Aid Effectiveness and with the PNA’s 2010 Cash Transfer Strategy. Collaboration and coordination has been further strengthened by the WFP, FAO, UNDP, UNICEF, and UNRWA in terms of information-sharing and assistance coordination and by use of a common poverty-targeting database among donors, meetings with stakeholders and efforts of the social protection working group (<http://unispal.un.org/UNISPAL.NSF/0/7BB55ADFF186ABBE852577A4004E9EB0>)

<sup>90</sup> The Ministry of Social Affairs (MoSA) is the main organization through which the PA delivers social assistance. One of its most important programs in terms of scope and funding is cash assistance programs targeted towards poor households.

### **National Food Safety Initiative (NFSI) (2010)**

The NFSI was launched officially in March 2006 by signing a joint declaration by the public and private sector institutions including: Ministry of National Economy, Ministry of Health, ministry of Agriculture, Palestine Standards Institution, Palestinian Federation of Industries, Palestine Trade Center, Palestinian Food Industries association. As a result of this partnership a national technical Committee has been formed with membership all the members of NFSI including UNIDO (United Nations Industrial Development) and WHO as strategic technical advisors. (<http://www.nfsi.ps/en>). This work falls under the Standards Conformity and Quality programme within UNIDO's Trade Capacity Building Office. Following a significant investment of time and work by UNIDO and relevant technical working groups a strategic plan on NFSI is launched in October 2010.

The NFSI is a public –private partnership to address the challenge of upgrading the National Food Safety Infrastructure based on its long standing experience in similar interventions in the developing countries. The objectives of the strategy are as follows:

- Laws and Regulations. The development of modern, relevant and enforceable food safety law and regulations within an enabling policy environment.
- Food Control management. The establishment of an effective food control management function determined by national legislation.
- Inspection Services. Building qualified, trained, efficient, and honest food inspection services for the administration and implementation of food safety law and regulations.
- Food monitoring and Epidemiological Data. Ensuring the availability of well-planned and established food monitoring and testing facilities, capable of meeting the requirements of food inspection systems.
- Information, Communication, education and Training. Ascertain the delivery of information, education and advice to stakeholders across the farm - to - table chain (<http://www.nfsi.ps/en>).

### **National Development Plan (2011-2013)**

Several strategic goals and priorities were set across main sectors including governance, social economy, and infrastructure (PNA, 2011). Food security was mentioned in the national expenditure plan part of agriculture and rural development sector, where agriculture was considered a main contributor to food security.

### **From Shared Vision to Action Plan – Agricultural (2011-2013)**

The agricultural community lead by the Ministry of Agriculture (MoA) of the PNA and supported by the Food and Agriculture Organization of the United Nations (FAO), has developed a “Shared Vision” (Strategy) for the agricultural sector. This strategy envisages a sustainable agriculture that is both feasible and capable of achieving food security, competitive in local and foreign markets through optimal use of resources as part of a comprehensive development. The Shared Vision underlines: The Strategy feeds into the overall Palestinian National Plan (PNP) 2011-2013, which was endorsed by the Cabinet in March 2010. The entire process has been closely

supported by FAO with technical advice and consultancies. The Ministry of Planning and Administrative Development (MoPAD) took example from the process in the agriculture sector to inform other line ministries on sector formulation.

In summary, the strategic objectives as identified in the “Shared Vision Agriculture Sector Strategy,” are to:

- Promote farmers’ perseverance, attachment to their land and retention of their occupations and livelihoods;
- Manage, effectively and sustainably, agricultural resources throughout the Palestinian territory, ensuring the environment is conserved and protected against deterioration;
- Ensure, within the Agriculture Sector, a proper institutional and legal framework;
- Improve the productivity of plant and livestock agriculture and its contribution to realizing food security;
- Ensure appropriate agricultural infrastructure and services;
- Improve the ability of Palestinian agricultural products to compete in local and external markets; and
- Enhance the agricultural sector’s operational capacity to help achieve the requirements of state-building (PNA, 2010b).

Since the launch of the Strategy, progress has been made to translate its strategic objectives and policies into action-oriented activities, projects and programmes at the national, district and sub-sectoral levels. As with other sectors, MoPAD has mandated that a comprehensive Strategy Action Plan (SAP), feeding into the 2011-2013 Palestinian National Plan, should be developed from each Line Ministry’s Sector Strategy, based on a participatory methodology. The MoA and FAO are already actively working on SAP formulation for the “Shared Vision”, based on the Agriculture Project Information System (APIS) architecture for sub-sectors and activities to facilitate the implementation monitoring. This process was finalized in November 2010 and involved inclusive stakeholder consultations and technical support committees to address different agricultural subsectors and intervention themes (PNA, 2010b).

### **Cross-Sectoral National Gender Strategy (CSNGS) (2011-2013)**

This strategy is prepared by Ministry of Women’s Affairs (MoWA). This acts as a instrument to build up an independent Palestinian state that will invest in and benefit actively and efficiently from the contributions, capacities, and skills of both its female and male citizens; and thus pave the way to attaining just, comprehensive, and sustainable human development.

The content of the strategy reflects the PNA’s commitment to equality and equity, respect for human rights, and active involvement in eliminating all forms of gender-based discrimination. The Strategy seeks to both address and solve problems that prevent women from enjoying equal status with men in Palestinian society, as well as to contribute in achieving the third Millennium Development Goal (MDG3) - “*Promote gender equality and empower women*” - which is also consistent with the

goals of the PA Ministry of Women’s Affairs (MoWA). The Strategy document seeks to promote gender equity and equality by addressing priority gender-related problems. It offers guidance and serves as a reference for reducing gender gaps and developing appropriate gender-responsive programs, projects and actions to positively influence the living and working conditions of both men and women, with equity and equality. It aims to advance the status of women in Palestinian society and promotes equal opportunities for all citizens in accordance with their varying abilities, skills and conditions. Of its strategic objectives is:” *To improve women’s participation in the labor market and increase their participation in economic decision making*” (PNA-MoWA, 2011).

#### **Box 4**

#### **Food Security International Stakeholders in the oPt**

**WFP** has been providing food assistance to the oPt since 1991. It works on emergency relief for the destitute (in partnership with the Ministry of Social Affairs (MoSA); livelihood support for vulnerable households; school meals in the most food-insecure areas; and cash-for-work and cash-for-training, to contribute to and promote self-reliance by preserving agricultural assets to restore livelihoods. It works with partnership with other national (ARIJ and PCBS) and international bodies (FAO, UNRWA, UNICEF, etc.) mainly in food security assessments and vulnerability analysis in the oPt ([www.wfpal.ps](http://www.wfpal.ps)).

**FAO** is the key agency within the multilateral system responsible for coordinating donor efforts in the rehabilitation of agriculture in the aftermath of emergencies. Since 2002, FAO has supported the preparation for and response to food and agricultural threats and livelihood emergencies in the oPt. FAO interventions are essential to enhance overall food security, reduce dependency on relief assistance, develop assistance strategies, and contribute to institution and partnership building. FAO leads the Consolidated Appeals Process (CAP) for agriculture to collectively define the humanitarian needs and required response (PNA, 2010b).

**UNICEF** works with the Palestinian Authority and a broad range of partners to protect children and women from the impact of violence, and to prevent further deterioration in their conditions and well-being; focusing on health and nutrition, water and sanitation, education, protection and participation. UNICEF works to deliver principles enshrined in the Convention on the Rights of the Child, the World Fit for Children Declaration and the Millennium Development Goals through support for policy development monitoring and advocacy (<http://www.unicef.org/oPt/overview.html>).

**UNRWA** deals with the humanitarian consequences of the dispossession of some three quarters of a million Palestine refugees forced by the 1948 Middle East war. UNRWA is the main provider of basic services – education, health, relief and social services (<http://www.unrwa.org/>).

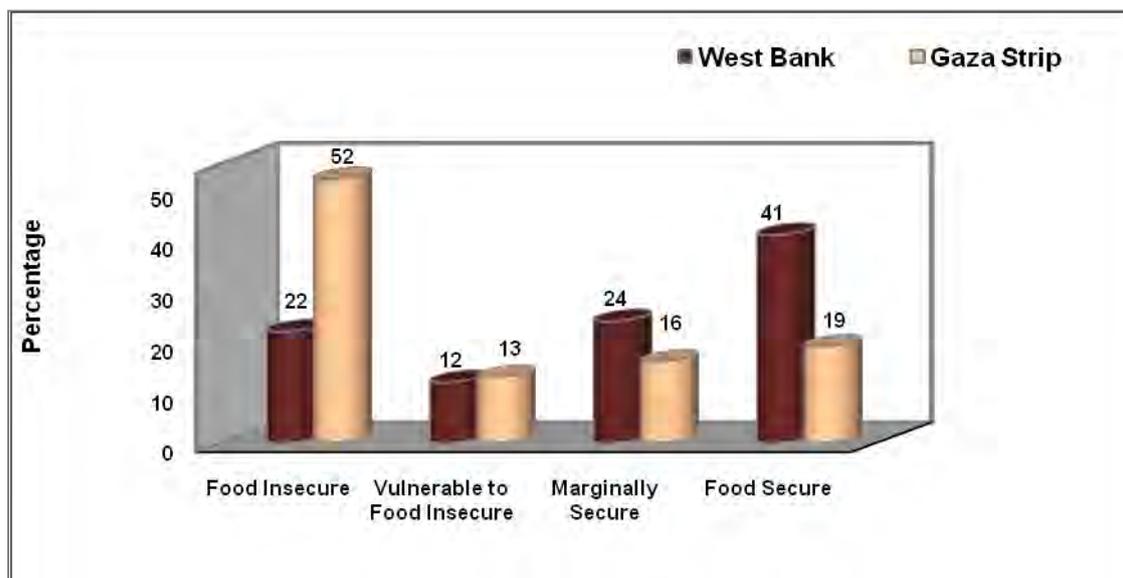
**CAP (Consolidated Appeal)** is humanitarian sector’s main tool for coordination, strategic planning and programming; used by aid organizations to plan, implement and monitor their activities together. Working together in the world’s crisis regions, they produce appeals, which they present to the international community and donors. In the oPt it is a financial source for NGO’s, brings together committed donor funding and the implementing agencies NGO’s and UN agencies in the oPt. The last few years witnessed active participation of the foreign NGO’s and civil society organizations (<http://ochaonline.un.org/cap2006/webpage.asp?Page=1924>). *And others: UNDP, WHO, CIDA, ACF, AECID, ICRC, Oxfam, SCC, ACTED, CARE international, etc.*

## 4. Food Security and Poverty Status in the oPt

### 4.1 Food Security

The definition of food insecurity in the oPt combines income and consumption levels measured in USD per adult equivalent per day (Annex 2). It also includes whether there has been no change or a decrease in food and non-food expenditures. As such, the measurement of food insecurity considers only the problem of economic access to food and essential non-food items resulting from the lack of income-earning possibilities for Palestinian households. Other dimensions of food security, including food availability and food consumption, are generally less problematic. Food is generally supplied in sufficient quantities and with an acceptable variety in local markets, mainly from imports. Yet, current availability of food on the market could be hampered given the volatility of the peace process and the high dependency on Israeli and international markets (WFP/FAO/PCBS, 2011).

Considering the overall political dimensions have remained unchanged in the territory, Palestinians continue to experience a protracted livelihood crisis with households who have remained food insecure, now living in chronic food insecurity. In the year 2010, it is estimated that 1.43 million people in the oPt are food insecure (forming 33% of household members in the country) (WFP/FAO/PCBS, 2011). Up to 550,176 food insecure persons are estimated in the West Bank (22%) and 829,954 are estimated in the Gaza Strip (52%). In addition, 13% are vulnerable to food insecurity, 21% are marginally secure and 33% are food secure (WFP/FAO/PCBS, 2011) (See Figure 1, Map 1 & 2, Annex 2). By contrast, almost half of the households in the West Bank are food secure compared to less than one fifth of the Gaza households (WFP/FAO/PCBS, 2011).



**Figure 6.2.1: Food security levels in the oPt by region, 2010.**

Source: WFP/FAO/PCBS, 2011

In the Gaza Strip, food security has been steadily deteriorating since the Israeli blockade and sanctions in June 2007, which suspended exports, decreased imports

and restricted the amount and type of goods permitted to enter through the crossings. Food insecurity further increased in aftermath of the Operation Cast Lead, and the subsequent massive international aid injection has protected access to food. Many products are still not allowed entry and a growing number of households have no economic means to access food commodities. In addition, the rural population reliant on agriculture and the fishermen in the Gaza Strip has no significant recovery due to land/sea access restrictions. Many households in Gaza have now stretched their coping mechanisms to a maximum and are becoming increasingly destitute (<http://www.wfp.org/countries/occupied-Palestinian-territory-/Overview>).

The refugee population is showing the highest prevalence of food insecurity in the oPt. In the West Bank, food insecurity levels are significantly higher among refugee households at 27% (225,400 people) compared to 20% among non-refugee households (387,742 people). Those living in the seam zone are also affected by higher levels of food insecurity reaching up to 40%<sup>91</sup> (were either food insecure or vulnerable to food insecurity), compared to 32% outside the Seam Zone (WFP/FAO/PCBS, 2011). Furthermore, 55% of herding households living or having their livelihoods in Area C was food insecure (WFP/UNRWA, 2011).

Food Insecure people are highly sensitive to socio-economic, political, and global shocks and highly reliant on assistance (WFP/ARIJ, 2010). Food insecure households are unable to secure sufficient incomes to meet their essential food and non-food requirements, due to the lack of income-earning possibilities as a result of Israel's restrictions to movement of goods and people, and artificially inflated food and transport costs. The high food and fuel prices internationally and the last war with Israel in the Gaza Strip have compounded this situation (FAO/WFP, 2009b). After years of conflict most of the food insecure households in the oPt are now chronically food insecure. The severity of food insecurity deepens as the conflict escalates or as additional shocks occur.

## 4.2 Poverty levels

The nature of poverty<sup>92</sup> in the oPt is intrinsically tied to the political developments in the West Bank and Gaza, which have had a significant impact on the social and economic wellbeing of Palestinians. Changes in domestic, Israeli and international policies have affected the Palestinian economy both in terms of growth trends and the volatility of growth (World Bank, 2011b). This has a natural consequence on indicators of wellbeing at the household and individual level. The extent of dependence on Israel and international aid and a regime of internal and external

<sup>91</sup> The closed area between the Green Line and the Barrier

<sup>92</sup> The National Commission for Poverty Alleviation (NCPA) established an official definition of poverty in the West Bank and Gaza in 1998. This definition was developed based on expenditures data from the Palestinian Expenditure and Consumption Survey (PECS) of 1996 and 1997. The official poverty line was set at the median expenditure level of certain key items of the poorest 25 to 30 % of households. The expenditure patterns of households with 2 adults and 4 children were used as the reference household in developing the poverty line. The items in the poverty line included food, clothing, housing, health care, education, transportation, personal care, and housekeeping supplies. This poverty line takes into account household economies of scale (household size) and equivalence scales (household composition) in consumption.

closures have created an economy characterized by extreme fluctuations in growth and employment and an increasing divergence between the two territories: the West Bank and Gaza Strip.

There is regional divergence in poverty between the West Bank and Gaza. While the West Bank's overall poverty levels are better than in Gaza, a significant proportion of the population in both regions remains at risk of falling into poverty. In 2009, poverty incidence in Gaza was twice as high as that in the West Bank (33.7% vis-à-vis 16%). In fact, since 2004, disparities in poverty incidence between the two regions have increased. Between 2004 and 2009, poverty in the West Bank fell from 23% to 16%. Conversely, during that time, Gaza witnessed an increase in poverty from 30% to 33.7%. Changes in poverty in both regions were driven by changes in average consumption expenditure growth rather than by a change in its distribution (World Bank, 2011b).

Poverty in the oPt is manifested either based on consumption or income levels. Based on consumption levels, in 2007 almost 25% of households were 'poor'<sup>93</sup> in the West Bank and 52% in the Gaza Strip (PCBS, 2008c). This number has increased dramatically in the Gaza Strip at the end of the year 2008 and beginning of 2009, due to the Israeli 'Cast Lead Operation' where an estimated 80% of people were under poverty relied increasingly on humanitarian assistance (WFP/ARIJ, 2010). In 2009, a little over a fifth of the Palestinian population lived in poverty; with 15.5% in the West Bank and 33.2% in Gaza Strip (PCBS, 2009d). On the other hand, 12% suffered from deep poverty (7.5% in the West bank and 20% in Gaza Strip) (PCBS, 2009d). This represents an encouraging 4% point reduction compared to 5 years earlier. This recovery has been fragile and has been accompanied by an increase in the public sector jobs and in social assistance (World Bank, 2011b) (see Figure 6.2.2, Map 3).

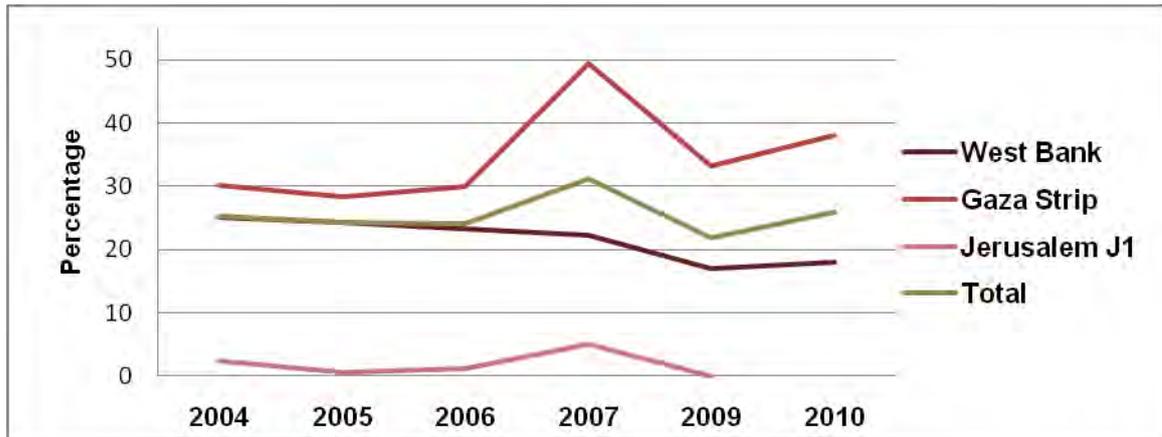
Poverty in Jerusalem J1<sup>94</sup>, on the other hand, is significantly lower in comparison to the West Bank and Gaza Strip regions (PCBS, 2010b). It reflects the major differences in economic, development and livelihood conditions between both areas; oPt and Israel. It is noted that Arab Israelis living in East Jerusalem are affected by political conflict and economic growth or depreciation in the oPt. However, Palestinians in J1 have access to Israel, resulting in better work and trade opportunities (see Figure 6.2.2).

Using the consumption-based definition of poverty, 26% of the Palestinians in the oPt lived in poverty in 2010. The poverty rate was 18% in the West Bank, but was much higher in Gaza at 38%. The latest PCBS data indicate that poverty remains a serious problem. Were it not for the significant social assistance extended to Palestinian households, the poverty rate in the oPt in 2010 would have been 31% (PCBS, 2011c). Thus, this massive increase in poverty demonstrates the vulnerability of the economy to political and economic shocks.

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<sup>93</sup> Based on Palestinians estimated poverty line was 2,278 NIS (581 US \$), while the deep poverty line 1,870 NIS (477 US \$) (PCBS, 2010b).

<sup>94</sup> J1 area is classified as East Jerusalem, where Arab Palestinians inhabit. J1 is part of Jerusalem that was occupied by Israel after the year 1967 (ARIJ/GIS, 2011).



**Figure 6.2.2: Poverty incidence in the oPt by region (percentage of population)\***

Source: (PCBS, 2010b)

\* Total poverty rates would be higher if Jerusalem J1 is excluded

There are multiple drivers of poverty in the West Bank and Gaza, with education and employment status being particularly important. Being unemployed or out of the labor force presents a significant poverty risk. Public sector jobs appear to offer greater economic stability and are associated with lower poverty levels in both regions; especially in Gaza. Poverty risk declines substantially with higher levels of education, whereby those with higher education are more likely to work in the public sector, especially in Gaza. Poverty in the West Bank and Gaza is strongly linked to labor market outcomes as a response to political conflict. This is evident in the high rates of unemployment in the West Bank and Gaza, which are the highest not only compared to countries with similar per capita incomes, but also in comparison to other countries in the MENA region, where unemployment rates are much higher than in the rest of the world (World Bank, 2011b). Labor market outcomes, which depend far more on the ability to trade freely within and outside the Palestinian territories, the free mobility of labor, and the competitiveness and dynamism of the private sector, reflect the limitations under which the PNA continues to operate (see Map 4).

“Female-headed households display an incidence of poverty 1.3 times higher than households headed by men” with nearly 30% of families headed by women falling below the poverty line (UN-ESCWOM, 2010). ‘Female-headed households are also among the poorest in Palestine (Freedom House, 2009). Such households represent 9.5% of all households and that 73% of them live in extreme poverty, struggling to meet the basic needs of nutrition, housing, and clothing (Freedom House, 2009). In addition, families headed by persons with no education with 27.4% under poverty, and decreased to only 4.6% among those families headed by persons completed Bachelor and above educational levels, families headed with employed persons was 14.0% and increased to 44.0% among households headed by unemployed persons (see Figure 6.2.3) (PCBS, 2009d).

### 4.3 Palestinians’ coping mechanisms

The resilience of Palestinian households to the continuous degradation of their food security situation can be attributed to a significant extent to the efficacy of their coping mechanisms. Support from relatives within or outside the oPt (credit through

traders between the West Bank and the Gaza Strip, remittances) and local charities, is essential in this regard (WFP/ARJI, 2010). Palestinian households are particularly vulnerable to the current hike in food prices and income fluctuations, since more than half of their total cash expenditure is dedicated to food (54.5%) (WFP/FAO, 2011a). By the first half of 2010, 16% of Palestinian households reported a decrease in expenditure levels. Of this group, 89% (or 14% of the total population) reported that the decrease in expenditures was on food (WFP/FAO/PCBS, 2011). High expenditures on food expose families, especially food insecure households, to risk in case of any food price fluctuation. The impact of the food prices increase on consumers' purchasing power is further aggravated by price fluctuations of other essential expenses: for example, the transportation cost index increased by 13% and 11.5% in Gaza Strip and West Bank respectively since 2007 (WFP/FAO, 2011b) (see section 5.1 *Rising Food Prices*).

The vast majority of households also resort to changes in their food consumption patterns (quantities, quality) in order to decrease food expenditures. In the Gaza Strip, food insecure households were unable to further reduce the amount of food purchased, and only quality could be further decreased. In the year 2010, the most commonly used strategy for households - in both West Bank and Gaza Strip- to cope with economic crisis is to defer the payment of utility bills, to purchase food on credit, consume lower quality food and consume lower quantities of food. Forty-three percent of households reported deferring payment of utility bills and 42% of households reported purchasing food on credit. The third highest reported coping strategy is consuming lower-quality food (32%), followed by consuming less food (29%) (WFP/FAO/PCBS, 2011).

In the West Bank, the level of food consumption did not vary between the second half of 2008 and the first half of 2010. By the end of the first half of 2010, 11% of households had "poor" food consumption, 18% "borderline" and 71% "acceptable" (see Map 5). Assistance continues to be a crucial complement to food insecure household's own coping mechanisms, especially in relation to the coverage of their staple food. In the Gaza Strip, by the end of the first half of 2010, 10 percent of households had "poor" food consumption, 19% "borderline" and 71% "acceptable". In 2009, 14% had "poor" food consumption, 23% "borderline" and 63% "acceptable". Food assistance is playing a major role to enable Gaza households to secure a diet with an acceptable amount and diversity of food (WFP/FAO/PCBS, 2011).

Most of the coping strategies, even if they are reversible (e.g. switching to less preferred but cheaper food, decreasing the amount of food consumed, foregoing health or education expenditures, and purchasing food on credit) can have a permanent cost on lives and livelihoods, through poorer health and nutritional status, excessive indebtedness and loss of future opportunities for higher skills and better paid jobs. Low-cost strategies such as suspension of payment of utilities and use of life savings have been exhausted for most households.

#### **4.4 Aid environment**

Since the beginning of the conflict with Israel, external assistance to the oPt has played a crucial role in mitigating the negative effects of the conflict on the food security situation and poverty incidence of the population. Depending on the political

situation, the focus of aid to the oPt has shifted between humanitarian and development assistance since 1967. In recent years, while the importance of social solidarity mechanisms must be acknowledged (including networks of relatives, friends and neighbors, as well as local charities and NGOs), support from the UN, bilateral and non-governmental agencies with food, cash, vouchers and inputs have been instrumental to maintain a minimum level of food intake and access to other essential services, thus preventing a humanitarian disaster to unfold (WFP/ARIJ, 2010).

Between 2001 and 2008, donor assistance to government increased 500% in the West Bank and Gaza, and in 2008, it comprised 58% of GDP (World Bank, 2011b). More than \$7.2 billion international aid is (Global Humanitarian Assistance Report, 2011) provided to the oPt between 2000 and 2009. International aid played a vital role in financing public sector and social assistance, especially in Gaza. Social assistance is vital in both territories since a significant proportion of the population lie close to the poverty line and is highly vulnerable to poverty. Thirteen percent of the population in the West Bank and 16% in Gaza currently consume no more than 1.2 times the poverty line (World Bank, 2011b).

The West Bank and Gaza have a multitude of social assistance programs run by the PNA, international organizations and NGOs. Remarkably, there are relatively low rates of overlaps where households receive assistance from multiple PA sources. While 23% of Gaza households received social assistance from the PA, 50% received assistance from UNRWA (the United Nations Relief and Work Agency) alone. Judging from the low proportions of households receiving benefits from multiple sources, there appears to be a reasonable level of coordination among donors and especially within the PNA. Only a fifth of all beneficiaries received more than one source of aid, and a mere 6% of all households receive assistance from multiple PNA sources (Global Humanitarian Assistance Report, 2011).

The international community has tried to assist Palestine, contributing to the access component of food security, through supplementing the efforts of indigenous humanitarian food distribution networks (by the PNA, political associations or NGOs). However, humanitarian aid in the country is not well-coordinated amongst the various players, and based on imperfect knowledge of who most needs the food. This has resulted in some deserving cases receiving none, whilst other families receive it from more than one source (though even this does not assure that sufficient food is provided for their needs) (World Bank, 2011b).

At midyear 2011, and according to oPt consolidated Appeal (CAP) 2011, requirements for funding were 536 \$ million to address the most urgent needs in the oPt, however, only 206 \$ million in funding to date, leaving unmet requirements of 330\$ million. As of June 2011, the CAP is only 38% funded, which makes it the fifth-lowest CAP globally. More than two thirds of proposed projects have received no funding. The food security sector funds covered only 31% of its requirements, where the total funding<sup>95</sup> reached 63,521,048 USDS \$ leaving 140,439,448 USD \$ unmet requirements (UN-CAP, 2011). With the Food Security facing a major funding shortfall, there is a growing concern that the poorest refugee and non-refugee food

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<sup>95</sup> Funding means contributions, commitments, and carry over

insecure families who rely on food assistance will not be able to enjoy an adequate diversity of food during the remainder of 2011 (UN-CAP, 2011). Disruption of food assistance would likely force families to resort to negative coping mechanisms (e.g. selling of assets, foregoing medical/educational expenses), which would undermine any long-term livelihood recovery.

Palestine is one of the most complex aid environments for humanitarian agencies, which need to overcome the obstacles and limitations imposed by the Israeli authorities. These include the restrictions on the movement of goods and people between zones and the bureaucratic procedures they entail. An example of the multiple restrictions are the procedures demanded by the Israelis for the delivery of food supplies to Gaza, which cost the World Food Programme and the UN Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) \$4m per year (Mountain, 2011). Accordingly, the huge amount of money spent on humanitarian assistance would be unnecessary if the international community pressured Israeli authorities to lift the blockade, respect international humanitarian law, and allow full access to humanitarian aid and recovery (Mountain, 2011). The international community, particularly the main humanitarian donor governments, must understand that their approach of providing large sums of money without calling for the end of the blockade and occupation is not the best way to help the Palestinians – in reality; it allows the protraction of the humanitarian crisis. The current period is critical. Donors need to back the agencies they fund with a real commitment to building a Palestinian state, something they all agree to. The absence of a solution will lead to more violence, a deeper humanitarian crisis and further instability, none of which will benefit the Palestinians or the Israelis.

It is worth noting that aid dependency is negative for the opportunity of a self – sustaining Palestine. Often external donors set criteria for the delivery of finance i.e. they fund projects that meet certain criteria. However, these often miss the real Palestinian needs and the status as experienced by Palestinians.

As long as access to the oPt remains restricted by Israel and prevents the delivery of material and services, as well as the mobility of persons and goods into and outside of both the West Bank and the Gaza Strip, the efficiency and effectiveness of humanitarian, recovery and longer-term assistance will remain low. Food and livelihood assistance should therefore be complemented by protection efforts to reduce risks to livelihoods linked to the violence and closure regime, in order to prevent - and not only respond to - lives and livelihoods threats (WFP/ARIJ, 2010).

However, it is clear that food security, livelihoods and protection interventions will have limited impact until the basic causes of food insecurity, loss of livelihoods and protection needs are addressed. The resolution of the peace process and end of the occupation are needed to lift constraints on economic investment, development of infrastructure and services, and growth (WFP/ARIJ, 2010). As long as the basic causes of food insecurity are not removed, reliable and steady financial, and in-kind contributions from the donor community are required to avoid breaks of essential food and non-food assistance, and to enable the provision of levels of assistance sufficient and diverse; including income generating activities and job opportunities to raise beneficiaries out of their poverty and food security gap.

## 5. Food security dilemmas in the oPt

Palestinians are experiencing a dramatic decline in their living standards and a regression of the economy due to internal and external movement restrictions, limited control over natural resources, restricted access to local and international markets, low rates of economic production and limited access of Palestinian laborers to working opportunities. The occupied Palestinian territory (oPt), currently suffers many problems within its agricultural and food markets sectors, including; food insecurity, poor national strategy and planning, difficulties in agricultural production and planning, and heavy reliance of food aid and foreign imports; along with an increasing pressure in having to export many natively produced products to developed regions, thus creating a growing resource scarcity. All mentioned issues are causes and underlying causes behind food insecurity and poverty in the oPt.

### 5.1 Rising food prices

Like many other developing nations in the world,<sup>96</sup> the oPt has suffered from the recent global financial crises, consequent rising food costs and having to export increased quantities of food and agricultural products to developed states (UNSCN, 2009). This global increase in food prices has severely affected the oPt, especially seen in the recorded significant rise in food prices from 2005 to present (2011). The rise in the Food Price Index in the oPt mirrors the trends in the Food Price Index in the international markets, which witnessed a remarkable increase during 2010. Because the oPt imports most of its basic food commodities, the rise of food prices in the global markets (Global food price index is 37% above its level compared to March 2010), was reflected directly in the Palestinian market. The Food Consumer Price Index (FCPI) in the oPt experienced considerable fluctuations during the second half of 2010. The FCPI continued to increase during the second half of 2010, reaching 149.5 points in October (See Annex 3). The FCPI rose by 28% between 2007 and mid 2011, as a result of the international food prices increasing and a number of import restrictions.

It is worth mentioning that food makes up almost 39% of the CPI, making it a key determinant of inflation in the oPt (PCBS, 2010a). The main food items that noticed significant increase in price in the West Bank, since the year 2005 and until the year 2011, are white flour, sugar, fresh beef meat, and powdered milk (see Annex 4) (FAO/WFP, 2011b). The price of wheat flour remains higher than the average price of 2005 by more than 53% in the West Bank and 40% in the Gaza Strip.<sup>97</sup> Staple food such as rice and sugar follow the same trend over a 5 year period<sup>98</sup> (See Annex 4) (FAO/WFP, 2011b). In fact purchasing power declined by 10% from June 2010 to

<sup>96</sup> The oPt is placed in the lower middle-income group of countries in terms of Human Development and MDG attainment (UNDP: 2010), and is categorized as a 'developing nation' by all major socio-economic data-sets (Mahjoub, A: 2010)

<sup>97</sup> Data from PCBS, prices from 2005 average to 2011 average (first six months) of Haifa White Wheat Flour (average price of a 60 kg bag of flour): In 2005, flour cost 109.10 NIS/bag in the West Bank and 104.61 NIS/bag in Gaza. In 2011, it has increased to 166.72 NIS/bag in WB and 146.67 NIS in Gaza.

<sup>98</sup> For the same reporting period, in the West Bank, rice increased 40% and sugar rose 85%. In the Gaza Strip, rice increased 70% and sugar rose 75%.

March 2011. Impoverished households increased their consumption of products made mostly of oils/fats (45%) and sugar (195%) (UN-CAP, 2011).

The ratio of household expenditure on food to total expenditure in 2010 was 48% in the West Bank (WFP/FAO, 2010), while the Gaza households dedicate 61%, staying at virtually the same levels since 2009 (WFP/FAO, 2011a). This is an alarming level when compared to the threshold adapted by the PCBS to classify households by their standards of living. The Palestinian Central Bureau of Statistics (PCBS) defines the worse - off households to be those with food a consumption ratio exceeding 44% (PCBS, 2010a). High food expenditures expose families, especially food insecure households, to risks caused by food price fluctuation (UN-CAP, 2011).

The rising proportion of expenditure devoted to food over the total period of time is an effect of combined factors, such as: (i) higher food prices; (ii) complicated market channels and unavailability of diversified crops all seasons raising food prices; and (iii) lower purchasing capacity and lower incomes, which are raising the overall weight of the food component in the household economy. Households have to buy less food with the same or higher amount spent on it. Socio - economic factors such as employment, income levels and livelihood stability, combined with increasing prices, strongly influence the population's purchasing power, thus rendering food security a sub - set of consumption poverty. One method of measuring food security (and determining relative poverty) comes from using household expenditure surveys, and at the aforementioned average, many Palestinians are classed as both 'food insecure' and 'poor' (Smith & Subandoro, 2007).

## 5.2 Food imports/exports

According to the World Food Program (WFP), food represents 70% of imports into the Palestinian territories and as such has implemented programs in 2009 that ensured that the most vulnerable groups were assisted ([www.wfp.org](http://www.wfp.org)). The PCBS documented the imports/exports between the oPt, neighboring Israel and 'Other Countries'; discovering that Palestine's trade balance between all import/export relationships was always in the negative (PCBS, 2009a).

The oPt belongs, according to IFPRI, to the most food import depended region in the world. The net food imports accounted for over 80% of national consumption and are projected to rise even further. This high reliance on imported food can be attributed to both demand and supply side factors. Demand side factors are the rising population, where as the supply side factors include limited natural resources such as land and water. Shifting demand patterns from staples to higher value food products, combined with limited potential for land and water expansion, will further increase the oPt food trade deficit (PNA, 2010b).

Israeli and other logistical problems hamper the effective movement of trade in and out of the West Bank and Gaza Strip. The restrictions imposed on the movement of goods to/from/within the West Bank and Gaza have stifled the emergence of an export sector capable of contributing to economic development (see Map 6). Due to

the construction of the Segregation Wall<sup>99</sup> and related access restrictions, Palestinian exports to Israel, which account for about 90% of total exports, fell by 30% during 2008–2009. Restrictions on Palestinian exports, and on imports of production inputs, were further tightened during 2010 (IMF, 2011). The real distortion of the Palestinian trade structure is its heavy dependence on Israel since 1967 as the source or channel for exports and imports. Israel absorbs about 90% of Palestinian exports, most of them low value-added, and is the source or channel for about 80% of imports. In 2010, Palestinian trade with/through Israel accounted for 74% of total Palestinian trade, and the trade deficit with/through Israel accounted for more than 70% of the total deficit. The trade deficit with/through Israel rose from \$2.6 billion in 2009 to \$2.8 billion in 2010. This deficit was greater than the \$2.7 billion of net current transfers, which included the total donor support to the PA during 2010 (UNCTAD, 2011).

A 2011 joint PalTrade and EU report discovered that, ‘Goods are damaged as the loading and un-loading area is exposed to the heat and cold. There is a complete lack of cooling facilities and secure storage area at many checkpoints.’ It further discovered that, ‘Several major trade agreements that are not being respected. Among these is the Paris Protocol signed in April 1994 which specifically designated the Damia Bridge as the trade terminal between Palestine and Jordan. The Damia Bridge, however, has been closed since 2003 as it was declared a military zone by Israel (PalTrade & EU, 2009). (See section 5.5 *Physical restrictions and political impact*).

Within the oPt, only 60% of main food items<sup>100</sup> are produced locally, whereas less than 5% of the cereals and pulses consumed in the oPt are locally produced. Lack of access over land and natural resources have denied the Palestinian people their rights to regulate land use and to manage the utilization of their own resources. Some of the most productive areas are under Israeli control (such as Area C) and thus not accessible for cultivation due to Israeli Army military laws<sup>101</sup>. In the Gaza Strip, agriculture is distressed due to the export ban and unavailability and high cost of inputs and equipment<sup>102</sup> (UNCTAD, 2011). In addition, the Agricultural Sector is also particularly affected by recent climatic shocks including low rainfall precipitation, irregular distribution pattern of rainwater and rainfall delay, hence causing failure of crop growth.

<sup>99</sup> According to the Israeli plan the West Bank Segregation Wall will run across 774km and stands to isolate upon completion 13.6% of the West Bank total area (ARIJ/UM, 2011). About 85% of the Wall is built inside the Palestinian land, redefining the 1967 borders and dispossessing Palestinian land and natural resources (OCHA, 2009).

<sup>100</sup> The main food commodities are 25 selected food items including: Short grain profiled rice, Haifa white flour, White bread, Fresh goat meat with bones, Fresh beef meat, Fresh chicken without feathers, Fresh red snapper, Frozen fish, Pasteurized milk 3% fat, Powdered milk, Powdered milk kiko (No.1), Yogurt, Labaneh, Chicken eggs, Olive oil, Big size orange, Medium size banana, Red apple, Green house tomato, Local dry onion, Cauliflower, Greenhouse cucumber, Medium size potato, Lentils, Chick beans, Fine white sugar, Tea, White table salt.

<sup>101</sup> 61% of total land area in the West Bank is controlled by the Government of Israel for settlements, military use, checkpoints or road closures, western segregation zone and the West Bank Segregation Wall (ARIJ/UM, 2011).

<sup>102</sup> For list of banned imports/exports to and from Gaza see: <http://www.gisha.org/UserFiles/File/HiddenMessages/ItemsGazaStrip060510.pdf>. GISHA: 2010.

### 5.3 Economic restrictions

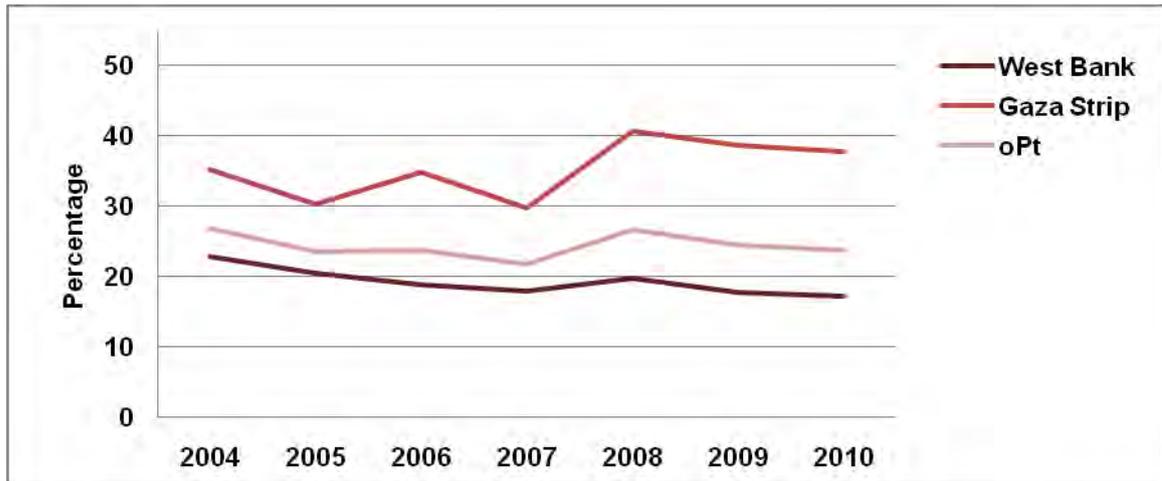
The performance of the economy of the oPt showed some improvement in 2010. It is estimated that economic growth in 2010 stood at 9.3% (World Bank, 2011a), compared to 7.4 % in 2009 (UNCTAD, 2011). Growth was more pronounced in Gaza, where gross domestic product (GDP) grew by 15%, compared to 7.6% in the West Bank (UNSCO, 2011). However, this is not a sign of sustainable recovery, but rather a sign of an economy operating from a low base, given the economic regression of the last decade (UNCTAD, 2011). Against the background of the sharp economic decline experienced since 2000, the continuing Israeli closure policy and confiscation of Palestinian land and natural resources raise concerns about the sustainability of the growth experienced in 2010, and the development prospects of the Palestinian economy. Concerns about the sustainability of the 2010 growth path also stem from the reliance on a large injection of foreign aid and on public-sector expenditure, as has been the case in most of the recent episodes of growth (UNCTAD, 2011). The ILO estimated that donors gave USD 1.28 billion to the PA in 2010, thus underpinning the growth of the Palestinian economy to external assistance (ILO, 2011). Moreover, the Palestinian private sector continues to be constrained by years of restrictions on movement and access, blockade, extremely limited access to external markets to export goods and import production inputs, and shrinking capital and natural resource bases.

Due to reluctant private sector investment, the economy is still reliant on the public sector, and the dependency is more acute in Gaza. During Q2 2011, 21.6% of oPt's workers were employed in this sector (14.5% in West Bank and 38.6% in the Gaza Strip), which highlights the stagnant nature of the economy and dependency on foreign aid to meet basic consumption needs and provide relief (PCBS, 2011b). This year the PNA placed a cap on hiring new public sector employees at 3,000 per year in an attempt to better control its bloated wage bill (PCBS, 2011b). In July 2011, the PNA reduced and delayed payment of salaries to civil servants<sup>103</sup> owing to failed commitments from donors, which threatened the public sector and the economy as a whole owing to the PNA's dependency on aid.

Additionally, unemployment (relaxed definition) in oPt has been relatively high during the period of 2004 and 2010 (see Figure 6.2.4), however it decreased from 28.6% in Q2 2011 to 24% compared to Q2 2010 (PCBS, 2011a) (see Figure 6.2.5). Refugees in oPt are also worst off with an unemployment rate of 23.8% (compared to non-refugees at 15.7%) (NAF, 2011).

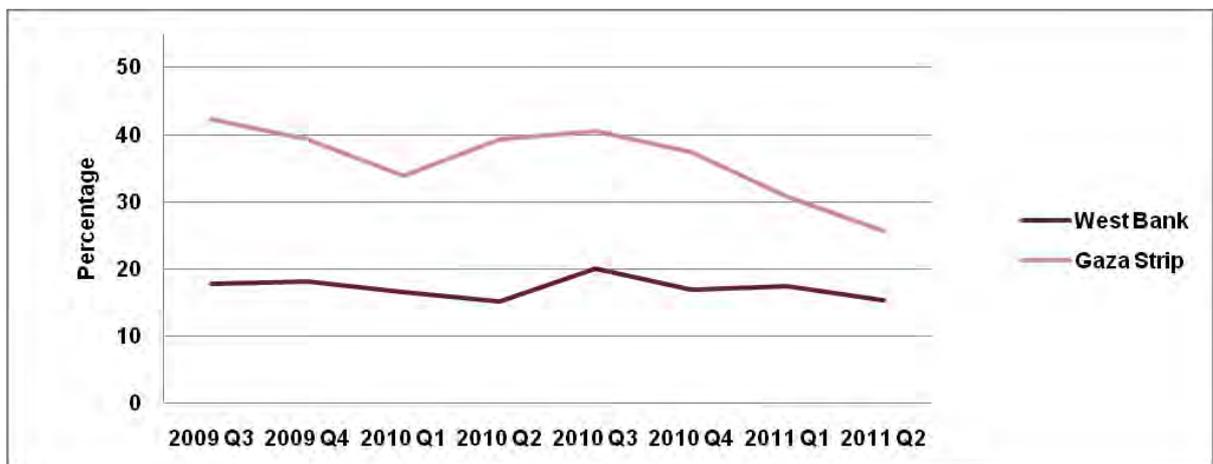
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<sup>103</sup> The PA issued half-payments at the beginning of July and the second-half at the end of the month. With threats of a Union strike looming in August, the PA regularized payments.



**Figure 6.2.4: Unemployment Rate in the oPt by Region 2004-2010**

Source: PCBS, 2010c



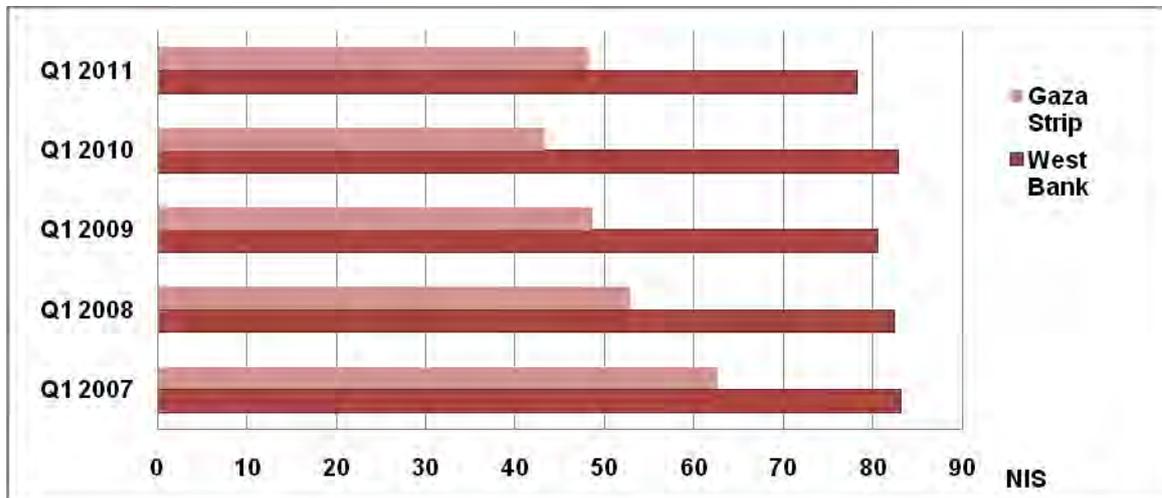
**Figure 6.2.5: Unemployment Rate in the oPt by Region 2009-2011**

Source: PCBS, 2011a

In 1<sup>st</sup> quarter 2011, in the West Bank 17.4% of the labor force was unemployed (ILO def.). Compared to the period prior the second Intifada (3<sup>rd</sup> quarter 2000), it is a drastic increase of 132%, while compared into the same quarter in 2010 the unemployment rate increased by 5% (it was 16.5%). The opposite trend is witnessed in the Gaza Strip where in the 1<sup>st</sup> quarter 2011, 30.8% of the labor forces were unemployed. The unemployment rate nearly doubled compared to the 3<sup>rd</sup> quarter in 2000 (unemployment rate was at 15.5% at that period). While compared into the 1<sup>st</sup> quarter 2010 the unemployment rate decreased by 9% (it was 33.9% in 1<sup>st</sup> quarter 2010) (WFP, 2011b). Despite the improvement in jobless figures in Gaza, over 86,000 Palestinians in Gaza (25% of the labour force) are not able to find employment and remain without means to support themselves or their families.<sup>104</sup> With a shift towards lower paying jobs, more people are finding work but earning less. Roughly half the working force is employed in agriculture/ manufacturing /construction/commerce and

<sup>104</sup> The average family size is 6.5 persons. Just 336,800 people are part of Gaza’s labour force per Q2 2011. Out of a population of 1.5 million in Gaza, only 228,500 people are fully employed.

earns approximately 35 NIS per day on average.<sup>105</sup> In addition, the average daily wage in the West Bank was 91 NIS (27 USD) in Q2 2011 compared to 62 NIS (18 USD) in the Gaza Strip (NAF, 2011).<sup>106</sup> (Figure 6.2.6) (See Chapter 3.3).



**Figure 6.2.6: Average daily wage in the West Bank and Gaza Strip during Q1 2007 and Q1 2011**

Source: PCBS, 2011a

Even these high unemployment rates understate the true degree to which Palestinians lack work, since those who have jobs increasingly report being underemployed during the work week. The incidence of underemployment among those employed rose from 15% in 1998 to more than 25% in 2009 (World Bank, 2011b).

#### 5.4 Agricultural and food planning

Many of the current agricultural problems are not an exclusively ‘Palestinian issue’ (I.e. rising food prices, and increased costs of agricultural inputs, rise in fuel and food transportation costs) as the territory is experiencing problems faced by the other regional and global states as a result of international economic situations. However, there are a number of uniquely Palestinian factors facing the oPt’s agricultural and food markets sector. Widely held to be the ‘last occupied’ nation in the World, (Occupied Palestine, 2011), Palestinian livelihoods, markets and development is intertwined with that of the Occupying power; Israel. The relationship between the oPt and Israel is complex, in both a de jure and de facto sense. Israel impacts agricultural life in the oPt in a number of negative ways, such as through; the confiscation of agricultural lands, control over water and irrigation supplies- often denying Palestinian farmers full water rights (Amnesty International, 2011), controlling a substantial proportion of imports/exports in the region, arbitrary road closures which effect food distribution planning, and economic sanctions which impact food security.

It is noted also that there is a marked difference between the agricultural and food markets in the West Bank and those in the Gaza Strip (ANERA Reports, 2011). The

<sup>105</sup> Palestinians in Gaza are not allowed to work in Israel/Settlements since the start of the Second Intifada.

<sup>106</sup> The average daily wage in Gaza increased just 3.7 NIS from Q2 2010 to Q2 2011.

Gaza Strip is far more heavily dependent on food importation and food aid, with the agricultural sector suffering more greatly from land isolation, military closures, a ban on many necessary food and agricultural imports and ban of many exports from the Strip etc (OCHA, 2009). The agricultural and food situation in terms of food security and sustainable production is far graver in the Gaza strip than in the West Bank.

The agricultural sector accounts for between 11%-20%<sup>107</sup> of the total Palestinian economy, employing approximately 15% of the formal workforce and up to 39% of the informal workforce, and accounting for around 20% of all oPt exports (WFP/FAO, 2009b). It is noted that the percentage of the labor force engaged in agricultural work increases during times of strict closures and political crises. In terms of gender, the agricultural sector employs 10.1% of ‘formal’ male workers, and 27.5% of women in the same category (PCBS, 2009b). In terms of ‘informal’ workers, 90% of women in this classification work as agricultural laborers. Daily wages in the agricultural sector are generally lower than the average daily wages in all other economic sectors by approximately 20% (PCBS, 2009b).

Agricultural production in the oPt is essential to food security in two ways: first as a source of production for local consumption and second as a source of export for income generation. The total agricultural land currently used by Palestinians covers 30.5% (1834.8 km<sup>2</sup>) of the territory’s total land area and 54.4% of the total lands deemed suitable for cultivation (ARIJ-GIS, 2008). Agricultural activities in the oPt are characterized mainly as family based production activities to subsist household own needs. Fifty-eight percent of both plant and livestock production are mainly for the domestic consumption, 23% to sell the surplus after meeting the domestic consumption and only 20% for direct sale (PCBS, 2008a).

Despite the potential for producing many crops (all year round) in the oPt; less than 5% of the cereals and pulses consumed in the oPt are locally produced and only 60% of the Palestinians’ main food items<sup>108</sup> are locally produced. Current availability of food on the market could be hampered given the volatility of the peace process and the high dependency on the Israeli market (Spanish Cooperation/ARIJ, 2007). Local food production would be larger, if, land, water and other inputs were more readily accessible (See Chapter 6.1).

### 5.5 Physical restrictions and political impact

Israel, as the occupying power, has a huge and undeniable effect on Palestinian living conditions; their level of unemployment, their economic growth and provision of public services. Food security and poverty conditions within the oPt are political issues; and they are political conditions of occupation not just of self-governance. Given that the Israeli Palestinian conflict is the longest running and seemingly most intractable conflict in modern history, it is not expected that it will be easy to reduce

<sup>107</sup> Sources vary- mainly due to the ‘informal’ categorisation of many of the workers within this industry.

<sup>108</sup> The main food commodities are 25 selected food items including: Short grain profiled rice, Haifa white flour, White bread, Fresh goat meat with bones, Fresh beef meat, Fresh chicken without feathers, Fresh red snapper, Frozen fish, Pasteurized milk 3% fat, Powdered milk, Powdered milk kiko (No.1), Yogurt, Labaneh, Chicken eggs, Olive oil, Big size orange, Medium size banana, red apple, Green house tomato, Local dry onion, Cauliflower, Greenhouse cucumber, Medium size potato, Lentils, Chick beans, Fine white sugar, Tea, White table salt.

food security and alleviate Palestinian poverty or create changes in sustainable development.

Due to the prolonged conflict, the oPt economy faces controls imposed by the Israel occupation on the movement of goods, services and people; impediments to construction and infrastructure investment in the oPt; the expansion of Israeli settlements (synonymous to confiscation of land and natural resources) and associated violence; access restrictions to land and sea for farming, herding and fishing; and the direct destruction of houses, crops, animals, water systems, and sanitation infrastructure by the Israeli occupation Army and settlers in the oPt.

The Segregation Wall<sup>109</sup> running through the West Bank isolates thousands of families from their land, threatening food security and the already fragile economy (WFP, 2011) (See Chapter 1.1). This Wall is still under construction which impedes Palestinian authorities in terms of creating future plans for development of agricultural lands and logistical planning in terms of food distribution. On 9 July 2004, the International Court of Justice (2004) rendered an advisory opinion on the “Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory”, which states that the sections of the Wall which ran inside the West Bank, including East Jerusalem, together with the associated gate and permit regime, violated Israel’s obligations under international law (UNCTAD, 2011).

Further to this, nearly one-fifth of West Bank agricultural land are inaccessible, (IFAD, 2010) to Palestinians due to Israeli measures and West Bank farmers face challenges not only in the realm of production, but in marketing as well; i.e. restrictions on movement and delays at checkpoints make it difficult for goods to be competitive in outside markets. Restricted allocation of visitor permits and the limited number and opening times of the wall gates have severely curtailed agricultural production. Greenhouses are dismantled and land is converted to lower-maintenance, less perishable but also lower-value crops such as wheat. In many ways then local production is directly impacted by the nature of the occupation and closure restrictions in accessing land in the West Bank; thus limiting the potential for increased West Bank food production in sectors that traditionally meet a large proportion of the local demand or reaching self sufficiency e.g. poultry, red meat, fresh vegetables, olive oil, etc. (See Chapter 1.1).

The Wall also isolates grazing land, undermining herders’ livelihoods. (Dolphin, Ray, 2009). This restriction on internal movements is contributing to the collapse of an already fragile economy and is threatening the population's food security. Population with land or other assets in the Seam Zone<sup>110</sup> and those whose livelihoods depend on land in Area C<sup>111</sup> are most affected (OCHA, 2011). Political and economic separation between the West Bank and Gaza Strip since 2006/2007 eroded markets and affected public revenue.

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<sup>109</sup> Currently 61% of the Segregation Wall is completed, a further 7% is under construction and 32% is planned (ARIJ/UM, 2011)

<sup>110</sup> The “Seam Zone” is the land between the Segregation Wall and the 1967 border.

<sup>111</sup> Sixty One percent of the West Bank is in Area C, where Israel retains control over security and planning/building (ARIJ/GIS, 2011).

The Gaza Strip has been under a blockade since the Hamas Party took control in June 2007, with extremely severe restrictions on the entry of goods and movement of people – and a virtual halt to exports – in and out of the territory. The easing of the blockade by Israel that began in June 2010 has not improved, where only 5% of the goods were exported compared to before the blockade (WFP, 2011). The type of goods exported during this time only consisted of cash crops headed for European markets under international projects. In addition, since 2008, the Israeli occupation prevented access to 35% of Gaza Strip’s agricultural land and 85% of its fishing zone, which strongly affects the population’s livelihoods especially fishermen and farmers (UNSCO, 2011)

It is not only the political management of natural resources and agricultural products that hinder sustainable food production; the physical landscape of the oPt also provides significant problems in terms of crop cultivation and animal rearing. As a 2011 agricultural report on Palestine claims, ‘both physical and bureaucratic barriers (ANERA Reports, 2011) ’stand in the way of farming families’ livelihoods and ability to produce adequate food stocks. In terms of physical landscape, the oPt has a diversified agro-ecosystem, varying from Al-Aghwar to semi-highlands, highlands, semi-coastal and coastal ecosystems. These agro-ecosystems give the oPt the potential to produce (all year round) up to 105 crops (notably vegetable crops), including 38 types of fruit trees, 37 types of vegetables and 30 types of field crops and grains (PCBS, 2008a). However, local production is limited and unstable due to its susceptibility towards climatic shocks and lack of access to land due to Israel restrictions. Despite the relative small superficies of the oPt, agriculture plays a significant role in Palestinian economy and Palestinian livelihood.

### **5.6 Demography, health and nutrition**

The oPt is characterized as one of the most densely populated regions in the world; coming in at number 20 World- wide. (UN World Prospects Report: 2005). Over the last decade, there has been a significant increase of nearly 30% of the total number of Palestinian population (PCBS, 2008b). With a rapid demographic growth at approximately 3% annual growth (PCBS, 2008b), the Palestinian population is projected to double in approximately 20 years (PCBS, 2008b). Increasing population contributes to oPt's chronic lack of space due to Israeli land restrictions. Already, urban densities are reaching critical levels in many areas, particularly Gaza (WFP/ARIJ, 2010). The average population density is approximately 414 capita/km<sup>2</sup> in the West Bank, while the population density in the Gaza Strip is 3,905 capita/km<sup>2</sup> (PCBS, 2008b & WFP/ARIJ, 2010). (See Chapter 3.1.1). The West Bank has a total population of 2.38 million inhabitants irregularly distributed across its eleven governorates. The Gaza Strip is hosting a population of 1.42 million, across its five governorates. Such conditions are exacerbating social, economical and environmental degradation and subsequent humanitarian concerns regarding the scarcity and provision of basic services especially as the growth rate has been faster than economic growth, contributing to the impoverishment of the population (FAO/WFP, 2009b). (See Chapter 3.1.1)

About 44% of the total population is less than 15 years old, while 3.1% of the population is above 65 years of age, forming almost half of the total Palestinian population (PCBS, 2008b). The high percentage of children and elders lead to a high

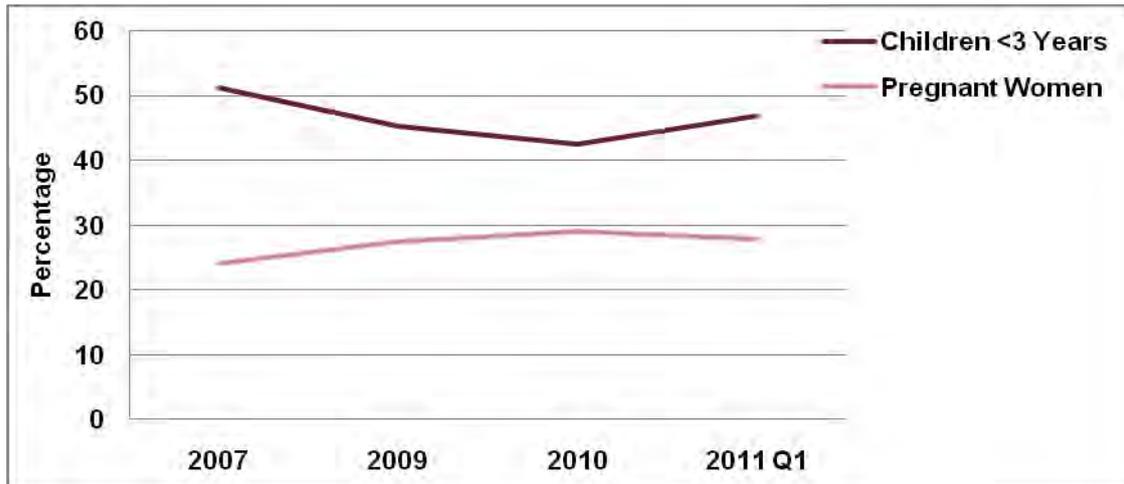
dependency ratio reaching 104 persons per 100 employed persons. The West Bank has a lower dependency rate (94) compared to the Gaza Strip (113), (PCBS, 2008b) due to two factors. The West Bank has a smaller household size (5.5 family members compared to 6.5) (PCBS, 2009c). This is anticipated to magnify food insecurity prevalence and depth and possibly become a national concern especially as the growth rate has been faster than economic growth, contributing to the impoverishment of the population (FAO/WFP, 2009b).

The high growth rate, population density, dependency ration, poor environmental conditions, unemployment, and poor economic conditions; all contributed negatively on the health and nutrition of the Palestinians and mainly children and women (WFP/ARIJ, 2010). Such conditions may change in households' food consumption patterns as a coping mechanism, with reduced amounts of animal products, vegetables and fruits; contribute to minerals and vitamins deficiencies, increase infections and leading to malnutrition. Conversely, the effects of malnutrition on individuals can maintain poverty, thus hampering oPt's economy and social development (See Annex 5).

The Palestinian population is going through an epidemiological and demographic transition. Much suffering lies behind the standard health indicators. People often report being negatively affected by the conflict and economic deterioration. These are contributory factors to the epidemic of chronic diseases. Life expectancy reached to 72.2 years in 2010 (PNA-MoHa, 2011). The total fertility rate in the oPt in 2010 is 4.6 (PNA-MoHa, 2011). According to the Infant Death the total number in the oPt was 1261 cases in the year 2010, where main causes are prematurity and low birth weight, and congenital malformations (PNA-MoHa, 2011). However, it is worth noting that life expectancy and literacy rates in the West Bank and Gaza are much higher than in countries with similar per capita incomes. In fact, Palestinian measures are on par with its much richer neighbors in the region, which have seven and three times the per capita income of the West Bank and Gaza (World Bank, 2011b) (See Chapter 3.2).

The Non – Communicable Diseases (NCDs) are now a key challenge for the health system in the oPt (PNA-MoHa, 2011). Several factors but mainly occupation, poverty and unemployment and transitions in food consumption patterns are contributing to the increasing prevalence of risk factors such as unhealthy diet and lack of physical activity. The PCBS results published at the end of 2010 point to a decline in the average portion of energy and nutrients per capita in the Palestinian Territory during 2009, compared to previous years. The daily average portion of energy per capita in 2009 was 1,687 calories versus 2,482 calories in 2006 (a decrease of more than 32%). This corresponds with a rise in the incidence of NCDs in the oPt and the increasing prevalence of diabetes, cardiovascular diseases and neoplasm.

Furthermore, according to Ministry of Health report Q1 2011, iron deficiency anemia affected approximately 46.8% of children and 27.9% of pregnant women in the West Bank compared to 45.2% and 27.5%, respectively in mid-year 2009 (PNA-MoHb, 2011). (see Figure 5.3).



**Figure 6.27: Anemia\* among Children and Pregnant Women in the West Bank 2007-2011.**

Source: ([www.moh.ps](http://www.moh.ps))

\*Anemic:  $Hg < 11g/dl$

Furthermore, access to health and nutrition services remain limited for the population in Gaza, Area C and some communities in East Jerusalem and /or the seam zones. An assessment by WHO and the United Nations Development Programme (UNDP) in 2011 showed that 63% of PHC and around 50% of hospitals infrastructure are inadequate for the provision of quality health care and thus suffer from limitations in health and nutrition services (UN-CAP, 2011).

## 5.7 Climatic change and natural disasters

Exposure to natural disasters such as drought and frost is also threatening the future capacity for development in the oPt. Evidence suggests that climate change will lead to greater extremes in weather patterns. Given that approximately 94% of cultivated land is rain fed in the oPt, climate changes are also likely to have significant impact on Palestinian agriculture.

Field crops and forages are the cultivations most affected by weather conditions. Also, open irrigated cultivations are affected by the prevailed warm wind and frost conditions. Al-Khamassin winds also affect the fruit trees bearing especially the olive trees. Additionally, the prevailed drought conditions during the last two year in addition to the sharp increase in the agricultural inputs costs have affected the feasibility of the agricultural activities. These conditions have imposed many of the small farmers to avoid reactivating their lands due to the loss occurred to their planted crops and many of the livestock holders have sold their folks as they did not manage to offer feed due to its high cost. The impact of such climate change on Palestinian Agriculture is especially high owing to already existing water scarcity in the region and dependency of Palestinian agriculture on rainfall.

It is worth noting that the amounts of rainfall in the West Bank for the last two rain seasons 2008/2009 and 2009/2010 were less than the historical average amounts by 7%-21%. The same climatic conditions are affecting the Gaza Strip governorates, where the amount of rainfall in the last two seasons is less than the historical average

rainfall by 12-36%. To be noted, the amount of rainfall in the West Bank in the last four seasons was less than the historical average rainfall amount (based on an average of 25 years) (See Chapter 8) (FAO, 2008-PNA-MoA, 2010).

The frost wave is another climatic condition that could have detrimental effect on agriculture and its production for example the frost wave that took place in 2008, has affected over 12,000 farmers, many more laborers and consequently the consumer markets. Such wave has had great impact on agricultural productivity, economy, market, labor and consequently food security. The estimated losses of the main rain-fed crops owing to drought and frost in the oPt over the agricultural season 2007/2008 was estimated to reach more than 113.5 million USD \$(Abdou Qasem, 2009).

### 5.8 Lack of policies and legislations

There are a number of existing national policies and strategy plans in place in terms of food security and poverty. However they are far from comprehensive or, as data shows effective. As a 2009 United Nations Conference on Trade and Development conference reports, '*there is a critical need to empower Palestinian policymakers with a full range of economic policy instruments to realize the Palestinian development vision*' (UN, 2009).

Examples on gaps in the national strategies are as following:

*The National Poverty Report (2004)* does not constitute official policy, nor is it entirely policy relevant. Furthermore, it does not set out any official national strategy plans or suggestions for planning and given its date (2004) requires revision.

*Food Security Strategy (2005)* deals only with food issues in relation to poverty and is not wide reaching or comprehensive enough in terms of tackling other main causes of poverty and poor development in the oPt. In addition, the Strategy needs to target in particular the most geographically, socially and economically disadvantaged areas/households/individuals, often living at the margin of the market economy. These must therefore be adequately informed of the provisions of the Strategy, such that they demand their needs be met through it, and indeed that mobilized public opinion drives its implementation. The Strategy is also ambitious (Ashley and Jayousi, 2006), but not overly so, for not all its intervention instruments may be implemented, as some may not receive high enough demand-led prioritization by the PNA, and/or be attractive to donors. The data and plans of the strategy were based on the Palestinian condition of year 2005 and previous years and accordingly it necessary to provide updating on the strategy. It should also be developed into a legislative framework to reduce food insecurity in the oPt.

*The Early Recovery Plan for Gaza (2009-2010)* could not tackle the food security sector separately and specifically but rather deals with a subdivision of the agriculture sector and accordingly the plan interventions were oriented directly to address the agricultural issues rather food security development or poverty alleviation.

*Cross-Sectoral National Gender Strategy (CSNGS) (2011-2013)* is a positive step in female empowerment in sustainable state development however de facto there are

many changes that still need to be made in terms of female participation and inclusion in food security planning and poverty alleviation.

*The Palestinian Reform & Development Plan (PRDP) (2010-2013)* doesn't properly nor comprehensively address food security and poverty related issues, and just mentions them through the following ambiguous wording; '*find ways to safeguard the welfare of vulnerable groups by investing in social development and continuing to build effective mechanisms for social assistance and protection*' (PNA, 2010). This does not however set put clear strategy or goals for poverty alleviation based on a clear understanding of poverty's drivers and causes.

*Proposal on the Development of General National Plan 2011-13* was set to review the PRDP 2008-10. Based on a more in-depth analysis, the plan will be further detailed. The new plan development approach will rely on devising sector strategies for the subsectors (including education, health, social protection, security, housing, water, administrative development, public finance, agriculture, etc.). Later, priorities of major common sectors (Social, Economy, Infrastructure, and Governance) will be identified as part of the national strategy (PNA- MoPAD, 2010). This plan did not address the food security or poverty issues neither as a separate sector nor as an integrated sector with other sectors leaving a clear weakness in tackling these issues which considered vital issues to initiate a national plan with an aim for Palestinian development.

*Palestine Moving Forward: Priority Interventions for 2010* - In August 2009, the 13th Government of the PNA announced and published its program to unify Palestinian society and friends in the international community behind the effort to end the occupation and establish the State of Palestine in two years. This document sets out the PNA's high priority interventions to be initiated or continued in 2010 to implement this program (PNA- MoPAD, MoF. 2010). However, this program did not address both food security and poverty alleviation as integrated interventions towards effective Palestinian sustainable development. Noting that this program is calling for a growing and forward looking population.

Furthermore, the Palestinians has no comprehensive law, strategy, or plan that tackle specifically the issues of food security, and rights to adequate food in a comprehensive Palestinian contexts where all causes, drivers and dilemmas of food security-adequacy are addressed. All existing relevant strategies and plans are not updated taking into consideration that significant changes took place on the political, economical and social bases at both national and international levels during the last five to ten years period.

## **6. Suggested Food Security Planning Policy and Response Elements in the oPt**

Human rights are the individual and collective rights recognized by states and enshrined in their constitutions and in international law. A functional protection system requires not only the ratification of the relevant human rights treaties but, arguably, also their constitutional protection and further implementation, as necessary, through the enactment of appropriate legislation.

Most international treaty provisions on the right to food are considered non self-executing – that is, they cannot be given effect without incorporating legislation. In addition, the crosscutting and complex nature of the right to food and its interrelationship with other human rights calls for legislative action, even where relevant human rights treaties are directly applicable within the national legal order. Therefore, it is always advisable for countries to have clear and explicit constitutional provisions, a framework law on the right to food, and adequate sectoral legislation.

The right to food is defined by the UN Special Rapporteur on the Right to Food as the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensures a physical and mental, individual and collective, fulfilling and dignified life free of fear. Accordingly, the general obligation of the governments is to take steps including, in particular, legislative measures to the maximum of available resources, towards the full realization of the right to food and to ensure non-discrimination.

An example of how to implement a legislative measure at national level, is the adoption of framework law (recommended by The Committee for Economic, Social, and Cultural Rights CESCR); as a major instrument in the implementation of a national strategy for the right to food. The term ‘framework law’ refers to a legislative technique used to address cross-sectoral issues. Framework legislation lays down general principles and obligations, and leaves it to implementing legislation and to determine specific measures to be taken so as to realize such obligations. Framework law strengthens government accountability by providing for better monitoring, access to courts and administrative recourse mechanisms, and also by helping government officials to have a better understanding of their role.

The FAO Guide on Legislating for the Right to Food provides a full analysis of the optimal content of a right to food framework law. The normative content, obligations and implications of the right to food have been explained in a number of reports and publications by FAO, CESCR and OHCHR (the Office of the High Commissioner for Human Rights), amongst others. As part of its follow-up to the adoption of the Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security (hereinafter referred to as ‘*Right to Food Guidelines*’), FAO has developed seven implementation steps for States, as follows:

- Identifying and targeting the hungry and the poor;
- Conducting a thorough assessment of existing policies, institutions and laws;
- Adopting a sound food security strategy;
- Elaborating a framework law;
- Allocating institutional roles and responsibilities;
- Monitoring progress towards established benchmarks; and
- Establishing recourse mechanisms.

Palestine is leading the way to call for statehood; it is necessary to research into the field of sustainability, as one of the most important features of state ownership should be the ability to manage one’s own resources and services. Legislations and enforcement of regulations in all sectors are vital elements to ensure effective

implementation of measures and plans most notably poverty and food security alleviation. Legal protection is a necessary step for the realization of the right to food as a right. While food security - a situation where all people at all times have access to sufficient, safe and nutritious food for an active and healthy life - can be achieved in theory without the adoption of legal measures, the addition of legally enforceable rights makes the future of food security more secure.

The oPt should revise all relevant and updated international conferences such as the World summit on Food Security 2009, and 2010 MDG summit, and the international conferences such as Sustainable Food Security for all by 2010 and find out the most relevant actions that are needed and can be implemented in a Palestinian context. In addition, PNA-relevant ministries should follow up the forums and programs that are specialized in food security at global level such as SPFS and FSN forum to obtain continuous updating on food security issues on global level. Networking and international connection should also be considered.

The oPt should update the food security strategy and accordingly draft right to food, food security, nutrition security or food sovereignty laws to alleviate food security and poverty levels. Palestine should also adopt the international guidelines to fulfill the legislative aspect at the government level including the legislative obligations and framework (Box 7). Another new development that should be considered is sectoral legislation that gives effect to the right to food in different ways. For instance, education law should recognize a right to school feeding and also mandates that the program funding be spent on procurement from family farms. In addition policy makers should strengthen, update, or replace existing legislation in the field of agriculture, environment and health that would complement and support food security laws. Palestinian decision makers should enshrine the right to food in their constitutions and institute specific legislative measures to implement this right. Laws will need to address common areas such as land tenure, access to water, minimum wage levels, social safety nets, credit, rural markets, food production and food quality.

The updating and drafting of rights to food within a Palestinian context should consider: creating policies set on updated data, involving of all decision makers and policy planners (all relevant ministries) in the utilization of data and resultant creation of policy, focusing on gender inclusion (where appropriate) in all policy planning, focusing on a range of drivers and causes behind poverty (i.e. social, cultural, effects of occupation) integrated in policy –making; creating national policy that for the first time integrates different government sectors; social economic, educational, health, environment to create a united front towards poverty alleviation and national sustainable development. Accordingly, several responses should be accomplished in a Palestinian context so as to fulfill the international guidelines for building legislative instruments in the field of food security in the oPt.

For Palestinian people affected by political conflict and other natural factors such as drought, the preservation, recovery and development of the resources necessary for their food security and future livelihoods should be a priority. Prolonged Palestinian political instability, insecurity and the threat of conflict seriously restrict livelihood activities and access to markets. Enhancing and supporting Palestinian primary production, income generating activities and employment, and promoting access to

markets, including goods and services are priority responses towards livelihood alleviation. Following are suggested responses that should be considered in the Palestinian case to fulfill rights to food at household level.

### 6.1 Food security assessment:

*When people are at increased risk of food insecurity, assessments are conducted using accepted methods to understand the type, degree and extent of food insecurity, to identify those most affected and to define the most appropriate response (The Sphere project, 2011).*

Food insecurity in the oPt is the result of wider macro-economic and structural socio-political factors, including; national and international policies, processes or institutions that have an impact on the Palestinian affected population's access to nutritionally adequate food and on the degradation of the local environment. This is usually defined as chronic food insecurity, a long-term condition resulting from structural vulnerabilities that may be aggravated by the impact of food security risks. Local and regional food security information systems, including food insecurity early warning systems and the Integrated Food Security Phase Classification, are important mechanisms to analyze information. The focus of the assessments should address how the affected Palestinian population acquired food and income before the food insecurity situation and how they cope now. The assessment should also analyze markets, banks, financial institutions or other local transfer mechanisms in the case of cash transfers, and food supply chains, including the risks associated with them. This will help assess the feasibility of cash or food transfer interventions and the design of safe and efficient delivery mechanisms.

Food security assessments in the oPt should have clear objectives and use internationally accepted methods and standards. Confirmation via different sources of information (e.g. crop assessments, satellite images and household assessments) is vital to have a consistent conclusion. Secondary information is beneficial for pre and post-food insecurity situation. As women and men have different and complementary roles in securing the nutritional well-being of the Palestinian household, this information should be disaggregated by sex as much as possible. On the other hand, food consumption reflects the energy and nutrient intake of individuals in households. Changes in the number of meals consumed before and after a conflict can be a simple yet revealing indicator of changes in food security. The number of food groups consumed by an individual or household and frequency of consumption over a given reference period reflect dietary diversity. This is a good proxy indicator, especially when correlated with a household's socio-economic status and also with total food energy intake and diet quality. Tools that can give robust measures on food consumption patterns and problems include seasonal calendars, the Household Dietary Diversity Score<sup>112</sup>, Household Food Insecurity Access Scale<sup>113</sup> or Food Consumption Score<sup>114</sup>.

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<sup>112</sup> Guidelines on "[http://www.fantaproject.org/downloads/pdfs/HDDS\\_v2\\_Sep06.pdf](http://www.fantaproject.org/downloads/pdfs/HDDS_v2_Sep06.pdf)"

<sup>113</sup> Guidelines on "[http://www.fantaproject.org/publications/hfias\\_intro.shtml](http://www.fantaproject.org/publications/hfias_intro.shtml)"

<sup>114</sup> Guidelines on "<http://home.wfp.org/stellent/groups/public/documents/ena/wfp196627.pdf>"

Market analysis should be part of the initial and subsequent assessments. An analysis of local and regional markets should include price trends, availability of basic goods and services, the impact of the food insecurity risks on market structures and the expected recovery period. Understanding the capacity of Palestinian markets to provide employment, food, essential items and services can help the design of timely, cost-effective and appropriate responses that can improve local economies. Market systems can go beyond short-term needs to protect livelihoods by supplying productive items (seeds, tools, etc.) and maintaining demand for employment. Finally, programs should be designed to support local purchase where possible.

Assessment and analysis should also consider the different types of coping strategy, who is applying them and when, how well they work and the nature of adverse impact (if any). Tools such as the Coping Strategies Index<sup>115</sup> are recommended. While strategies vary, there are distinct stages of coping. Some coping strategies are normal, positive and could be supported. Other strategies, sometimes called crisis strategies, may permanently undermine future food security (sale of land, distress migration of whole families or deforestation). Some coping strategies employed by or forced on women and girls (e.g. eating less food, in an attempt to keep the food for men and boys) may significantly and adversely impact upon their health, psychological well-being and social integration. Coping strategies may also affect the environment, such as over-exploitation of commonly owned natural resources. Analysis should determine a livelihood threshold to identify the most appropriate combination of responses which ensure that food security is protected and supported before all non-damaging options are exhausted.

In-depth nutrition assessment refers to a number of possible assessment approaches including anthropometric surveys, infant and young child feeding assessments, micronutrient surveys and causal analyses. Nutrition surveillance and monitoring systems may also be used.

In addition, meaningful participation of different groups of women and men and appropriate local organizations and institutions at all stages of the assessment is vital. Programs should build on local knowledge, be based on need and tailored to the local context. The oPt as subject to recurrent natural crisis such as drought and long-running political conflicts should have local early warning and emergency response systems or networks and contingency plans which should be incorporated into any assessment. It is critical to engage women in project design and implementation. Also, in-depth assessment should be conducted following the initial assessment where information gaps have been identified and where further information is needed to inform program decision-making, to measure program outcomes and/or for advocacy purposes.

## **6.2 Humanitarian assistance:**

*People have a right to humanitarian food assistance that ensures their survival and upholds their dignity, and as far as possible prevents the erosion of their assets and builds resilience* (The Sphere project, 2011).

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<sup>115</sup> Guidelines on “[http://www.fao.org/crisisandhunger/root/pdf/cop\\_strat.pdf](http://www.fao.org/crisisandhunger/root/pdf/cop_strat.pdf)”

There is a wide range of responses and advocacy to support, protect and promote food security in the oPt. While meeting immediate needs and preserving productive assets will be the priority during the initial stages of a food insecurity situation, responses should be planned with a longer-term perspective and integrated with responses from other sectors. In the short term, it may not be feasible to achieve food security from Palestinian people's own livelihood strategies. However, existing Palestinian strategies that contribute to food security and preserve dignity should be supported. Food security responses should prevent further erosion of available assets; lead towards recovery of assets lost and increase resilience to future hazards. It is necessary to monitor the wider food security situation in order to assess the continued relevance of an intervention, determine when to phase out specific activities, introduce modifications or new projects and identify any need for advocacy<sup>116</sup> (<http://www.oecd.org/>). Safety-net measures such as unconditional cash and/or food transfers should be considered for vulnerable households, with a plan to either link up with existing social protection systems or advocate for new safety nets where needed.

Before setting the humanitarian response in the oPt, life-saving responses should be prioritized. Distribution of food, cash or vouchers or a combination of these is the most common initial response to acute food insecurity. Other types of response should also be considered, including food subsidies, temporary fee waivers, employment programs, productive support to livelihoods, restocking, fodder provision and support to markets. When markets are functioning and accessible and there are no serious risks of inflation, the priority may be to re-establish normal market arrangements and revitalize economic activities that provide employment. Such strategies could be more appropriate than food distribution if they offer advantages in supporting livelihoods, reducing future vulnerability and upholding dignity.

It is worth noting that funding of food and nutrition assistance in post-conflict situations is often problematic, especially in the recovery stage. Food is one of the better-funded areas in relief operations but in the recovery, transitions and early development stages, food is often out-phased too quickly, leaving populations at risk and potentially reversing earlier gains in building peace. Transition and peace building are long-term processes. Food plays a critical – but often underemphasized – role in these processes. Recovery activities, focusing on improving food access, are often too late, too short, poorly funded and too small in scale (Henk, and Cullen, 2010).

### 6.3 Nutritional needs

***Ensure the nutritional needs of the affected population, including those most at risk, are met, where the food items provided are appropriate and acceptable to recipients so that they can be used efficiently and effectively at the household level (The Sphere project, 2011).***

<sup>116</sup> The evaluation could be based on established Development Assistance Committee criteria recorded by the Organization for Economic Co-operation and Development (OECD), which measure the following: appropriateness, connectedness, coherence, coverage, efficiency, effectiveness and impact. The OECD is to promote policies that will improve the economic and social well-being of people around the world.

Approaches that consider a number of variables including food security, access to markets, livelihoods, health and nutrition are appropriate to determine in the Palestinian case. Assessing the nutritional needs of the Palestinian affected people should be a priority especially that the Palestinian coping strategies are limited and most of the time rely on reducing food quantity and quality having irreversible impact on nutrition and health status of vulnerable people. Immediate food intervention is needed in the oPt; accordingly food distribution is considered as an action. However, it is necessary to conduct continuous monitoring for food availability and use at the household level, assess food prices and food availability in local markets, and examine food aid distribution plans and records, and conduct food security assessments for monitoring utilization of food rations and to better orient food aids and food security response plans.

## **6.4 Livelihood promotion**

*The promotion of livelihoods through protected and supported primary production mechanisms, and income generating activities is another priority response at Palestinian case (The Sphere project, 2011).*

### **6.4.1 Enhance production activities**

To alleviate the local livelihood, production activities should be adapted and / or supported in the oPt. To enhance and ensure the viability of primary production activities, food production strategies must have a reasonable chance of developing adequately and succeeding. This may be influenced by a wide range of factors including:

- Access to sufficient natural resources (farmland, pasture, fodder, water, rivers, lakes, coastal waters, etc.). The ecological balance should not be endangered, e.g. by over-exploitation of marginal lands, over-fishing or pollution of water, especially in peri-urban areas
- Levels of skills and capacities, which may be limited where populations are seriously affected by disease or where education and training may be barred to some groups
- Labor availability in relation to existing patterns of production and the timing of key agricultural and aquaculture activities
- Availability and access to the inputs needed for agricultural and aquaculture production.

Sound agricultural management and food production are essential in providing adequate food supplies, increasing national sustainable development, and delivering a high level of food security amongst their populations. Research demonstrates that sound agricultural management and sustainable planning of resources and marketing can reduce food insecurity levels, improve resource utilization and increase profit and food supply from agricultural business (Smith & Subandoro, 2007).

Food production activities should build on or strengthen existing patterns and/or be linked with Palestinian national development plans. During the production activities new technologies could be adopted to mitigate the production challenges. New technologies, on the other hand, should only be introduced if they have previously

been tested in the local area and are known to be adapted and acceptable to beneficiaries. When introduced, new technologies should be accompanied by appropriate community consultations, provision of information, training and other relevant support. New technologies may include improved crop varieties, livestock or fish-stock species, new tools, fertilizers, or innovative management practices. Wherever possible this should be done in coordination with public extension providers and input suppliers to ensure ongoing support and accessibility to the technology in the future and, critically, commercial viability.

One national Palestinian priority is helping agricultural Palestinian communities getting back on their feet and to break the aid cycle. Unfortunately a huge portion of Palestinian resources and economic growth/markets are dependent on foreign finance (Nassar, 2010). Breaking this will be the greatest step Palestine could take towards self-independence.

An example of helping Palestinian agricultural communities is providing production inputs include seeds, tools, fertilizer, livestock, fishing equipment, loans and credit facilities, market information and transport facilities.

An alternative to in-kind inputs is to provide cash or vouchers to enable the Palestinians to purchase inputs of their choice (Box 5). The feasibility of transferring cash to Palestinian households in order to provide access to production inputs should be based on availability of goods locally, access to markets and availability of a safe and affordable transfer mechanism. Priority should be given to seed of crops and varieties that are already in local use, so that Palestinian farmers can use their own criteria to establish quality. Palestinian farmers should be given access to a range of crops and varieties in any seed-related intervention so that they themselves can strategize about what is best for their particular farming system.

#### 6.4.2 Safety nets

Under Palestinian conditions, the single most important reform would be to ease restrictions and lift the closure regime that have constrained growth, investment and consequently job creation that is essential for the young and educated population. In the meantime, social assistance and protection will remain a critical element of Palestinian policy in the foreseeable future in the absence of vibrant employment generating growth. Several protection measures can be considered in the oPt:

#### **Box 5**

##### **Some of the preliminary conclusions of Shared Vision to Action Plan 2011-2013 – agricultural:**

- Clear need to communicate among the APT members to balance the Action Plan, to avoid duplication and develop visionary outlooks together.
- Cross border cooperation at professional level with neighboring countries (Israel, Jordan, Egypt) only if there is a mutual benefit (SPS development, barter trade, research, and training).
- CAP, the Consolidated Appeal Process, the planning tool with a yearly cycle and a commitment of approx US\$ 600 million. The low agricultural share (4%) should be increased by using the detailed assessment of the Action Plan in project form and present this to the CAP stakeholders in an early stage
- UNRWA and WFP: Presently there is no hunger, there is food insecurity. Tendency to abolish Food in Kind (imported flower, pulses, sugar) and to introduce of Voucher Schemes (cash for work vouchers) to improve the marketing aspect and enrich the local diets (PNA, 2010b).

- Protective measures in the oPt such as formal and informal cash and in-kind assistance (food, health care, education, protection for women, and care for the disabled, elderly, children, juveniles and school dropouts), as well as employment generating schemes. They are mainly provided by governmental institutions and international and non-government organizations.
- Preventive measures in the oPt such as insurance and strategies.
- Promotion measures in the oPt such as a range of livelihood-enhancing programs, such as micro –finance and -credit, skill development, and training and re-training for both adults and the youth. In addition to education or public works projects that while offering essential assistance are also building capability.
- Transformative measures which aim at ending the Israeli occupation or, in the mean time, address fundamental human rights issues need to be at the forefront of any sustainable social protection effort in the oPt. Otherwise is ignoring the root causes of Palestinian social and economic insecurity and failing to assure that the social protection efforts have positive long-term effects (Garry, 2011)

All these measures should be considered when developing safety nets in the oPt.

Looking forward, it is also important to continue to invest in human capital to build and maintain a productive base. The skewed composition of employment in the West Bank and Gaza implies that is not easy to predict how the economy will react if the political uncertainty and mobility barriers are lifted. Thus, the transition to a vibrant self-standing economy must be supported by a flexible, evidence-based program of support that is responsive to the changing needs of the Palestinian people. Ultimately, sustainable economic growth and job creation, essential for poverty reduction, will require a significant easing of the numerous restrictions that currently shackle the economy of West Bank and Gaza. That being said, the human development record of the PNA bodes well for the creation of a future Palestinian state.

In spite of these difficult conditions, the PNA has made a concerted effort to facilitate reforms within their limited ambit of influence: investing in human capital, ensuring equitable access to services, and providing a supportive environment for private investment. Ministry of Social Affairs (MoSA) set a Social Safety Net that helps Palestinian households living in extreme poverty to meet an acceptable level of living standards by providing assistance via complementary programs (cash transfer/food parcels). The program reaches the poorest Palestinian families below the deep poverty line (Box 6). MoSA is using a proxy means test formula (PMTF) as poverty proxy to select the beneficiaries for MoSA's assistance. It also established an effective poverty-targeting database, utilized the banking system

### **Box 6**

#### **The Social Safety Net Reform Project has supported the following achievements.**

- Approximately 5,000 of the poorest households have received monthly transfers ranging from US\$85 to US\$130 in 2009;
- More than 25,000 of the poorest households received a transfer of US\$200 (2009) and will have received a transfer of US\$135 by end of 2010 to cope with the global food and oil crisis;
- The Palestinian National Cash Transfer Program (PNCTP) provided cash transfers to more than 63,000 of the poorest households (2010).

to provide and to monitor cash transfers. It also created a national cash transfer program, managed by the PNA, through the merger of the Social Safety Net Reform Project with the European Union-backed Special Hardship Cases Program. The Social Safety Net Reform Program has provided the PNA with the opportunity to demonstrate its capacity in leading the difficult reform process and in effectively managing a large-scale and state-of-the-art cash assistance program.

The Social Safety Net reform comes in the form of a multi-partnership, where the World Bank and European Union have provide parallel financing, and with the WFP, FAO, UNDP, UNICEF, and UNRWA in terms of information-sharing and assistance coordination. Cooperation between the World Bank and the European Union led the merger of two separate projects to create the Palestinian Cash Transfer Program, which is consistent with the 2005 Paris Declaration on Aid Effectiveness and with the PNA's 2010 Cash Transfer Strategy. Collaboration and coordination has been further strengthened by use of a common poverty-targeting database among donors, meetings with stakeholders and efforts of the social protection working group. (<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,contentMDK:22705785~menuPK:64282137~pagePK:41367~piPK:279616~theSitePK:40941,00.html>)

However, given the proportion of the population in both territories living close to the poverty line, and the limited coverage of the poor, there is scope for improving the poverty targeting of social assistance in both territories. In the West Bank, there is scope to expand the coverage of poverty targeted social assistance to include a larger proportion of the poor, within the PA's resource constraints. Currently, coverage rates from any of the sources of aid remain in the single digits, and although these lower rates are consistent with a geographic prioritization toward Gaza, they seem insufficient. Coordination among food and social assistance institutions should be better practiced to avoid overlap and for better tackling the poor households. Improving MoSA's coverage of poor households and diversify their social assistance and services is also needed.

#### **6.4.3 Stabilizing Food Prices**

Since Palestine is highly vulnerable to the worldwide soaring prices, the Palestinian government should consider means to limit the transmission from higher international food prices. The World Development Report, 2011; suggests some important means to be considered by states to reduce impact of high food prices at national level including:

- *Changes in trade barriers: Reducing import tariffs to lower prices; lowering import quotas and imposing export restrictions to increase availability;*
- *Changes in domestic food taxes and subsidies: Lowering taxes and increasing subsidies to reduce prices;*
- *Direct price interventions: Imposing price controls to keep prices stable;*
- *Releasing food reserves to increase supplies (Henk, and Cullen, 2010).*

One of the feasible means to the Palestinians to consider is the release of food reserves where the decision makers, private traders, processors and farmers work together to store food to smooth over inter-annual and seasonal variations in food availability. Such a step should be well planned before implementation in the oPt,

since the food production-consumption and food supply demand chains should be well studied and oriented to self suffice the needs of the market, while conducting the reserve plan. Reserves at the local and national level can play an important role in stabilizing prices through accumulation when prices are low and release of stocks when prices are high. Physical food stocks can play important role in emergencies. Strategically storing and releasing stocked food or cash for purchases may increase food availability and access and stabilize prices. If the food is targeted to poorer households, or is of a quality that wealthy people will avoid, the release of stored food may increase access. Strategic grain reserves can be especially useful in areas facing regular seasonal shortfalls. Regular consultation with the private sector and decision rules on government actions could be helpful. Storage by households is, of course, also a vital way to deal with fluctuating supplies and prices. Household and community-based reserves are critical in covering inter- and intra-annual (seasonal) production fluctuations. Improvement of storage facilities is a key as a large share of the harvest is lost to post-harvest losses.

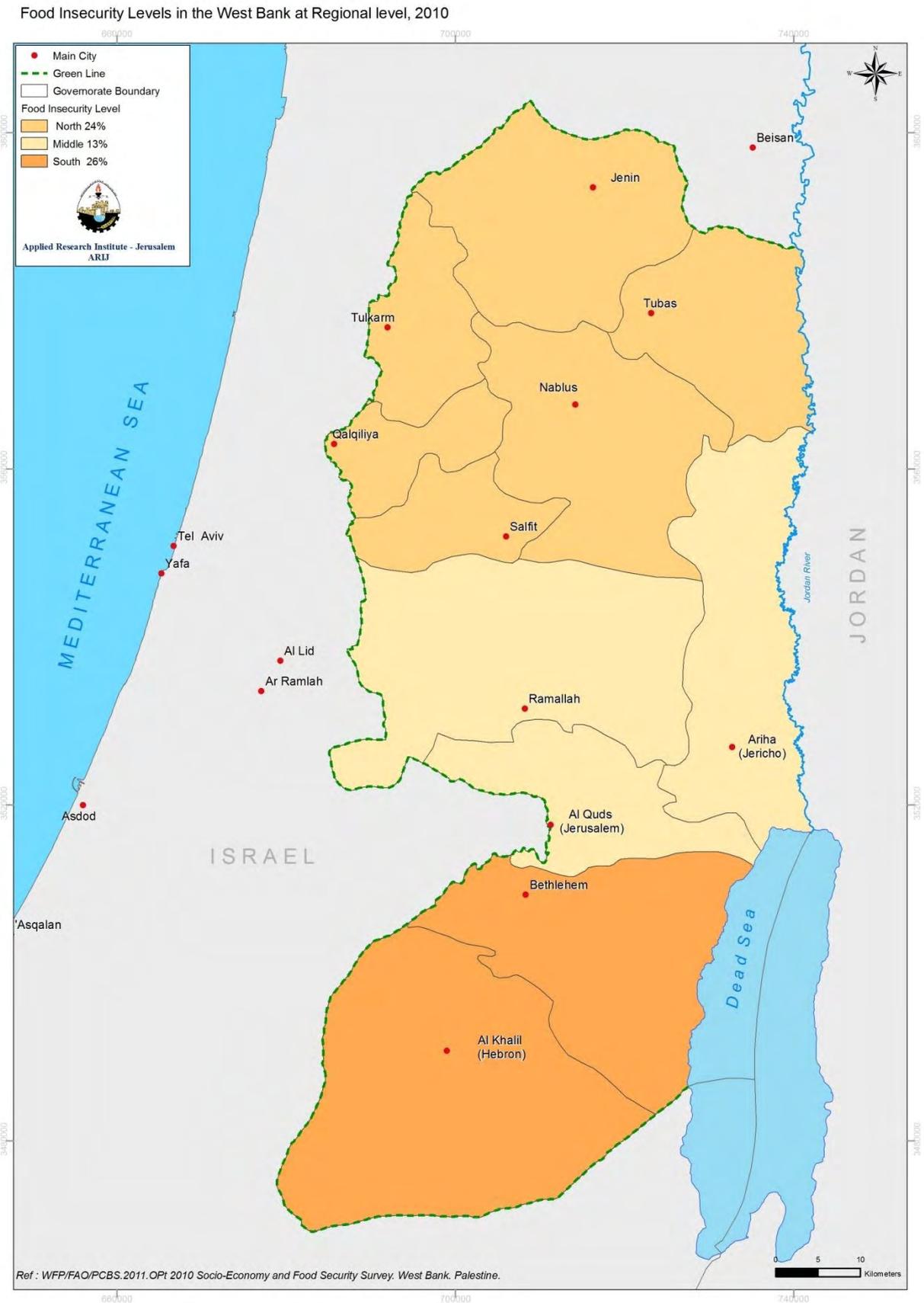
In addition, Palestine could benefit from the IFPRI launch of the unique new tool that provides early warning of extreme price variability. The tool provides a visual representation of historical periods of excessive global price volatility from 2000-present, as well as a daily volatility status. This status can alert policymakers when world markets are experiencing a period of excessive food price volatility; this information can then be used to determine appropriate country-level food security responses, such as the release of physical food stocks, (<http://www.foodsecurityportal.org/policy-analysis-tools/excessive-food-price-variability-early-warning-system>), which the Palestinian can use to better plan towards stabilizing food prices which has direct affect on food insecurity in the oPt.

**Box 7****National Food Security Plans:**

The following plans can be used in a Palestinian context to ensure better food security status in Palestine.

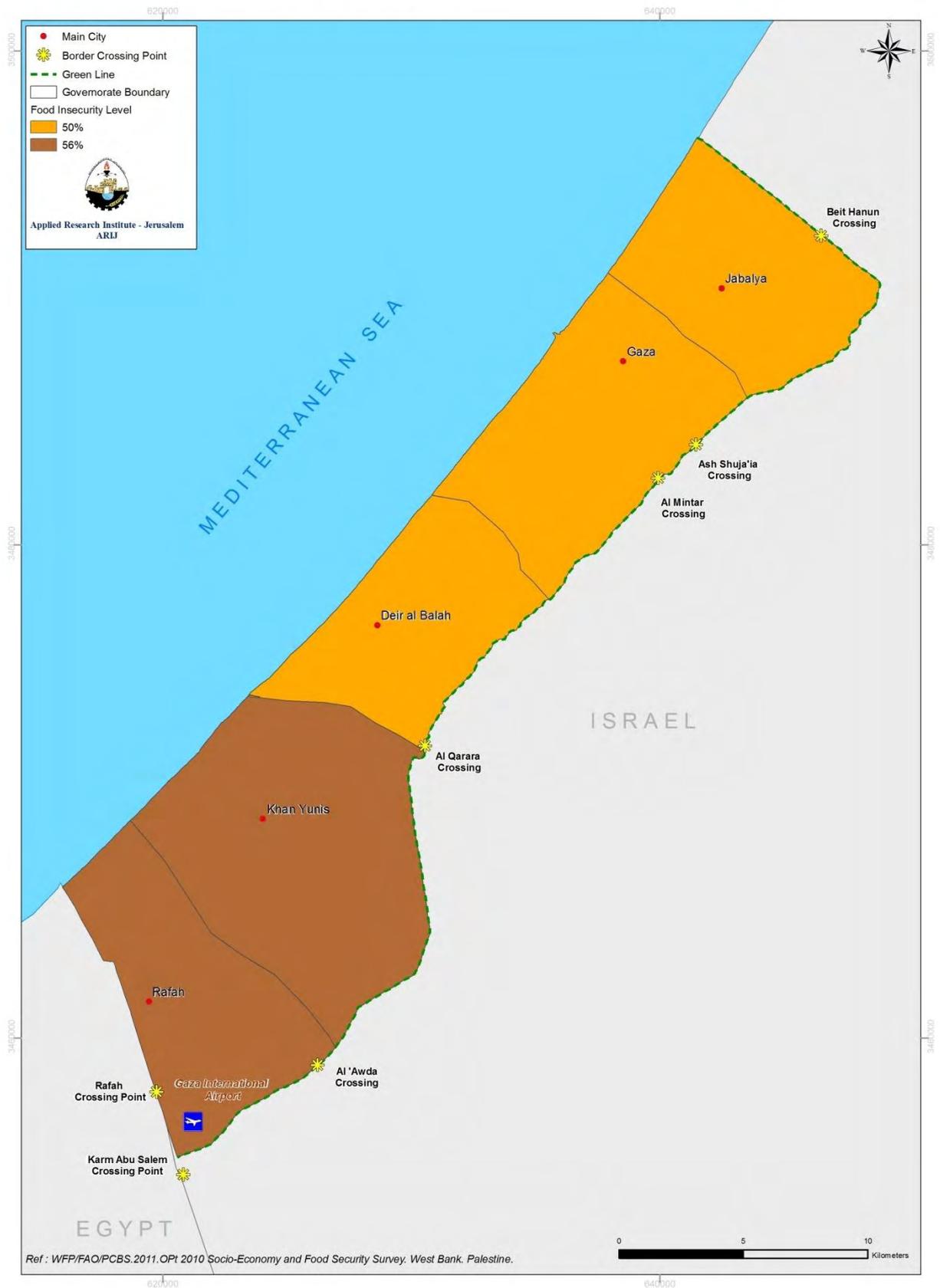
- Identification of domestic staple foods essential to food security.
- Annual domestic staple food consumption projections with accompanying national production goals and commitments. These projections should also include volumes to be set aside in local and national reserves.
- Implementation of domestic agriculture policies to support staple production for domestic consumption. These could include price supports for staple crops and exemption from mandatory import requirements. Countries could also implement import restrictions to ensure that staple food production not be threatened by export dumping.
- Implementation of policies which support diverse sustainable agriculture and livelihood systems of production. These include land tenure systems that would ensure adequate land and water resources for farmers; the guaranteed access, use, development and free exchange of genetic resources; and the protection of Farmers' Rights.
- Intellectual property laws that would exclude plant varieties, seeds and other genetic materials from patenting. Privatization of plants or animals or parts thereof, through patents and intellectual property rights regimes and other forms of exclusion like trade only in registered varieties, should be prohibited.
- Support and incentives for on-farm conservation and development of biodiversity, and for research and extension programs designed by farmers to reflect their priorities.
- Risk management policies to minimize the risk to health and the environment that may occur in the production, processing, distribution, preparation, consumption and disposal of foods and food products, including those that are genetically engineered.  
([http://www.iatp.org/files/Plan\\_of\\_Action\\_to\\_Achieve\\_Universal\\_Food\\_Se\\_2.htm](http://www.iatp.org/files/Plan_of_Action_to_Achieve_Universal_Food_Se_2.htm))
- Adopt immediate projects characterized with food security programs and intensive job creation projects simultaneously.
- Support innovative initiatives and research areas of agriculture and water resources which should be framed give answers for problems and to obtain optimum use of water and land resources.
- Devise an educational public program aiming to raise the awareness of the society of the poverty problem, gender equity, nature resource and water conservation, solid waste management.
- To devise special programs for special groups and areas like women, the youth, rural areas and refugee camps.
- To adopt the goal of 'reducing the economic dependency on Israel' economy.
- To support the financing of small and micro enterprises.

**Map 1: Food Insecurity Levels in the West Bank at Regional level, 2010.**



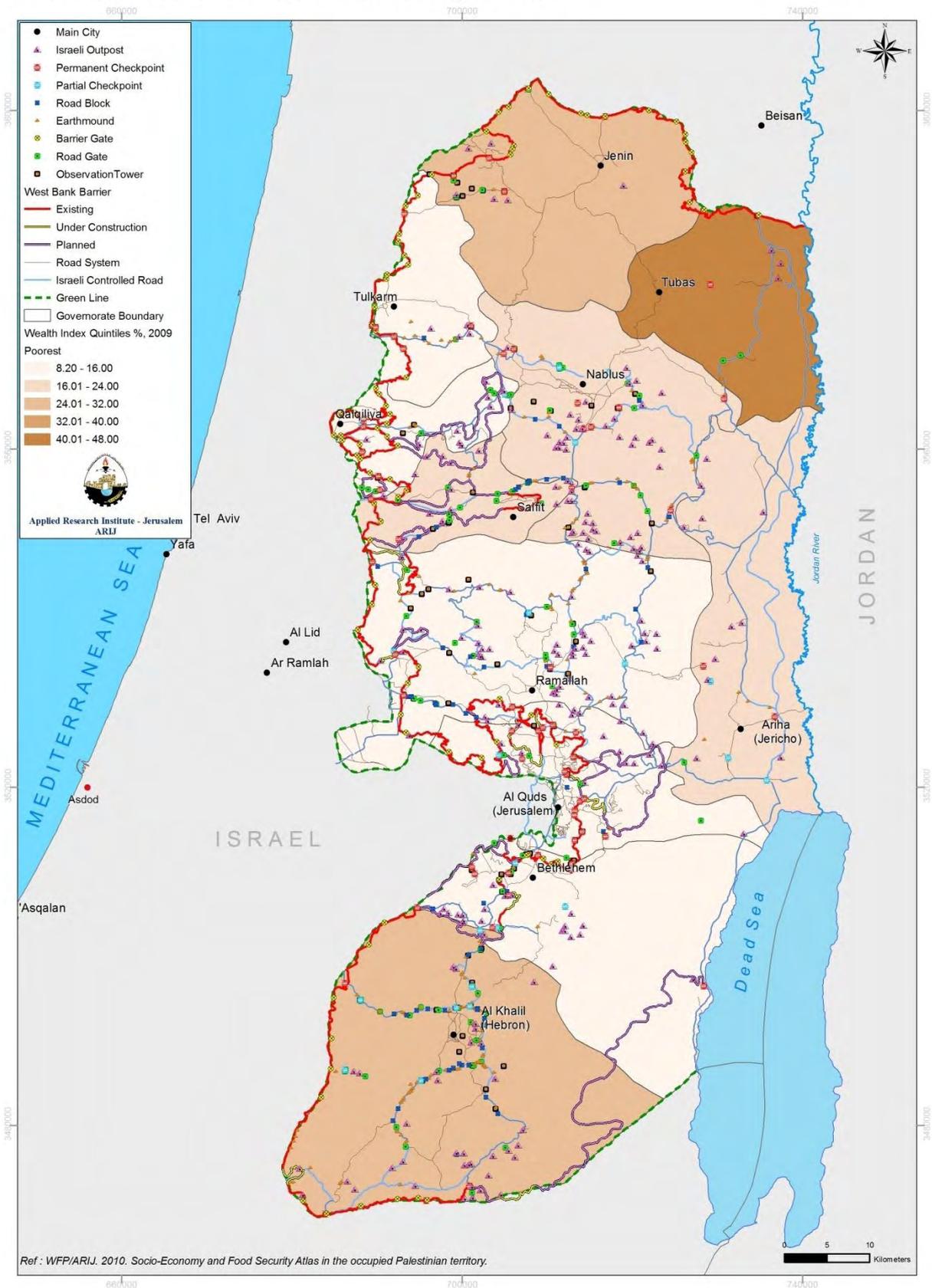
**Map 2: Food Insecurity Levels in the Gaza Strip at Regional level, 2010.**

Food Insecurity Levels in the Gaza Strip at Regional level, 2010



**Map 3: Wealth Index Quintiles in the West Bank – poorest, 2009.**  
**Map 4: Poorest Index and Israeli Physical Restrictions.**

Wealth Index Quintiles in the West Bank - Poorest and Israeli Physical Restrictions

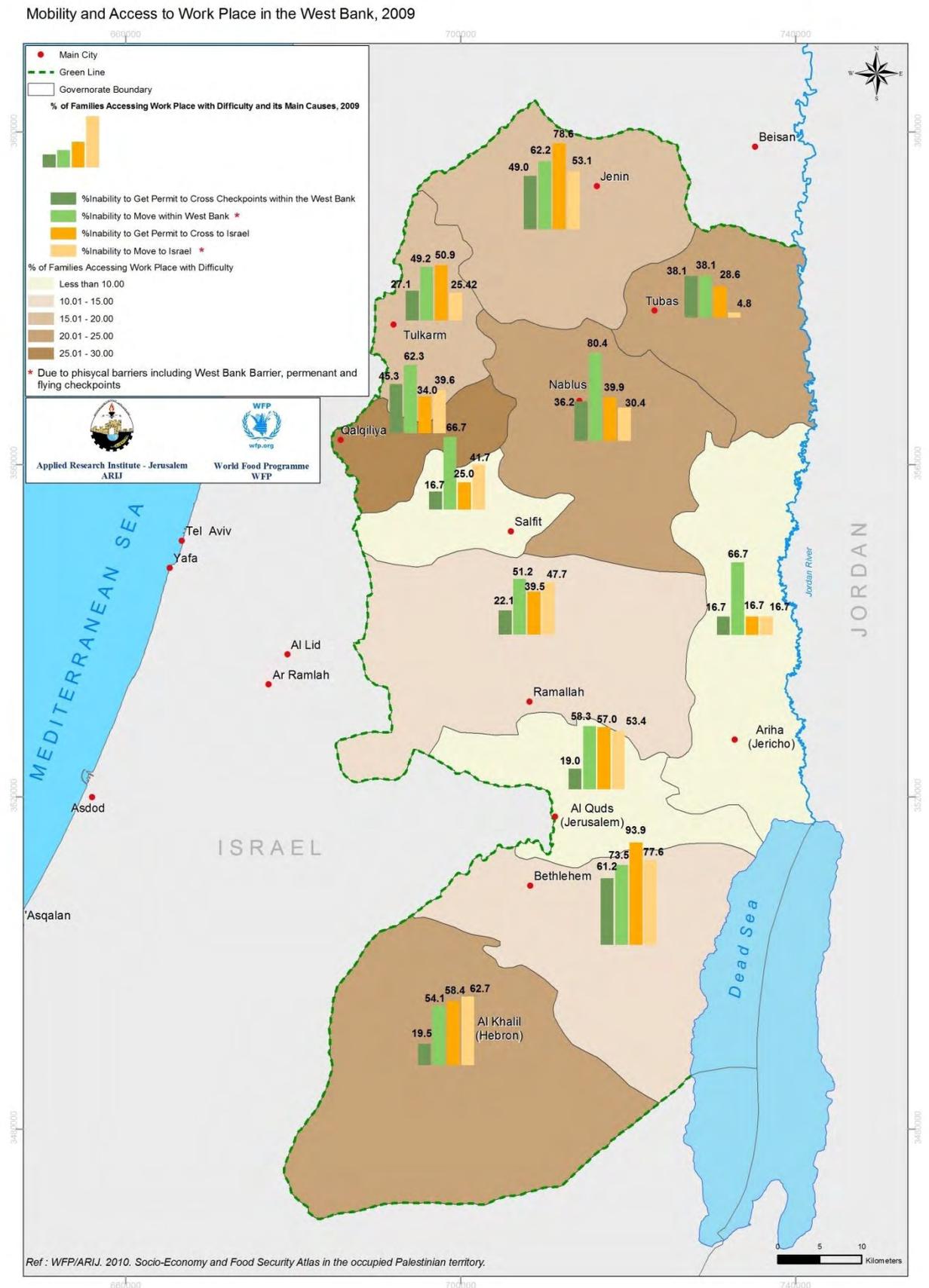


**Map 5: Food Consumption Scores in the West Bank and Gaza Strip, 2009**

Food Consumption Scores in the West Bank, 2009



**Map 6: Mobility and Access to Work Place in the West Bank, 2009.**



**Annex1:****Population Nutrient Requirements**

<b>Nutrient</b>	<b>Minimum population requirements<sup>1</sup></b>
Energy	2,100 kcals
Protein	53 g (10% of total energy)
Fat	40 g (17% of total energy)
Vitamin A	550 µg RAE*
Vitamin D	6.1 µg
Vitamin E	8.0 mg alpha-TE*
Vitamin K	48.2 µg
Vitamin B1 (Thiamin)	1.1 mg
Vitamin B2 (Riboflavin)	1.1 mg
Vitamin B3 (Niacin)	13.8 mg NE
Vitamin B6 (Pyridoxine)	1.2 mg
Vitamin B12 (Cobalamin)	2.2 µg
Folate	363 µg DFE*
Pantothenate	4.6 mg
Vitamin C	41.6 mg
Iron	32 mg
Iodine	138 µg
Zinc	12.4 mg
Copper	1.1 mg
Selenium	27.6 µg
Calcium	989 mg
Magnesium	201 mg

\* Alpha-TE - alpha-tocopherol equivalents

RAE - retinol activity equivalents

DFE - dietary folate equivalents

<sup>1</sup> Expressed as reference nutrient intakes (RNI) for all nutrients except energy and copper.

Source: RNI from FAO/WHO (2004), Vitamin and Mineral Requirements in Human Nutrition. Second edition, were used for all vitamin and mineral requirement calculations except copper, as requirements for this mineral were not included in FAO/WHO (2004). Requirements for copper are taken from WHO 1996), Trace Elements in Human Nutrition and Health.

**Annex 2:****Description of the Food Security Levels in the oPt**

<b>Food Secure</b>	<b>Marginally secure</b>	<b>Vulnerable</b>	<b>Food Insecure</b>
Households with income and consumption above USD 6.2 per adult equivalent/day	Households showing either income or consumption above USD 6.2 per adult equivalent/day (not both)	Households showing both income and consumption below USD 6.2 per adult equivalent per day EXCEPT house-holds showing no decrease in expenditure patterns (categorize as marginally secure)	Households with income and consumption below USD 5.1 per adult equivalent/day
OR	OR		OR
Households with income and consumption between USD 5.1 and USD 6.2 per adult equivalent/day and show no decrease in total food and non-food expenditures	Households with both income and consumption between USD 5.1 and USD 6.2 per adult equivalent per day with no decrease in expenditure patterns		Households showing decrease in total food and non-food expenditures, including house-holds unable to further decrease their expenditure patterns

Source: (WFP/FAO/PCBS, 2011)

**Annex 3:****Consumer Price Index, and Food Price Index between 2007 and 2011**

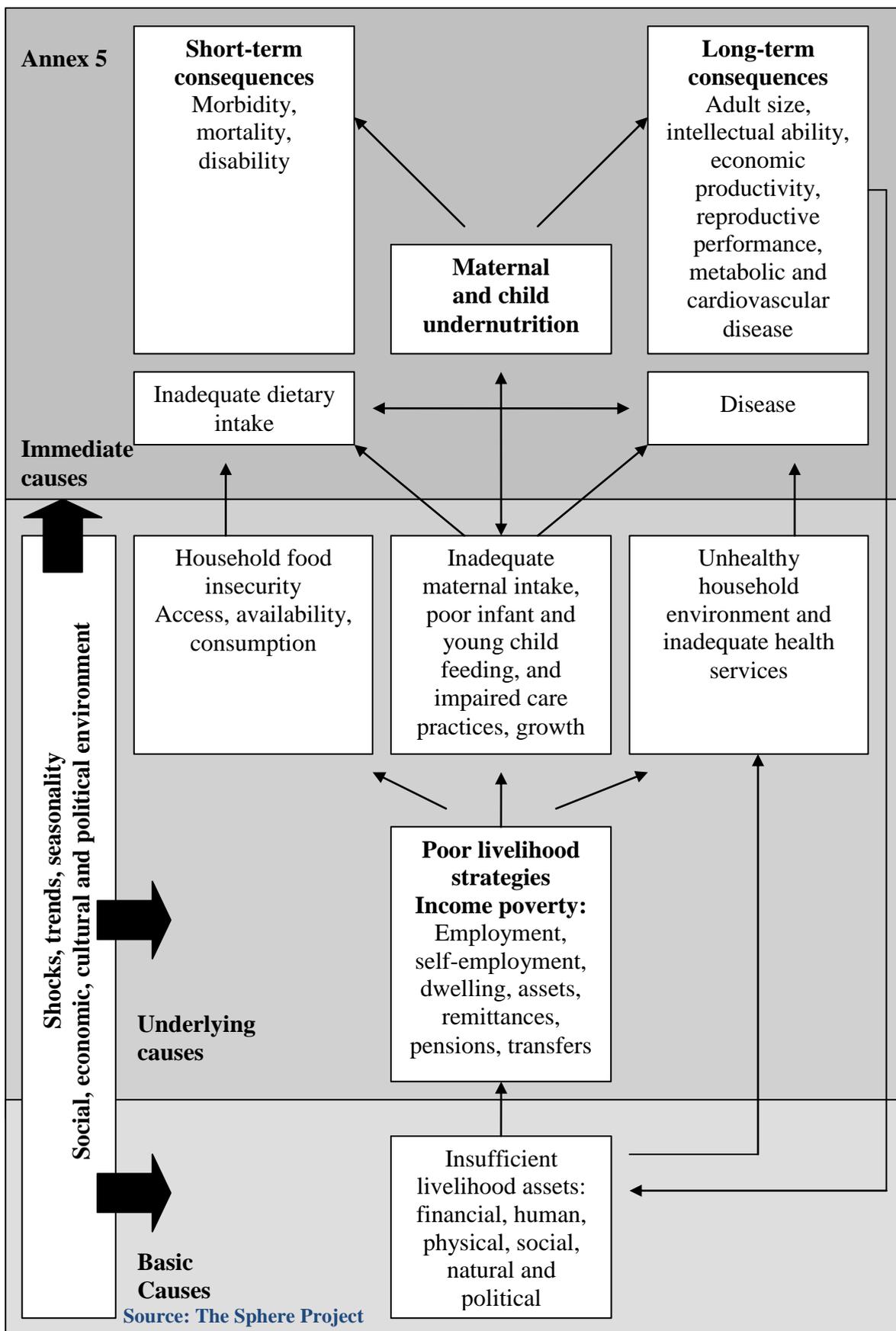
	2007	2008	2009	2010	Est. 2011*
<b>Gaza Strip</b>					
<b>Consumer Price Index</b>	108.9	124.1	129.6	131.79	132.9
<b>Food Price Index</b>	115.3	140.6	147.5	147.01	149.2
<b>West Bank</b>					
<b>Consumer Price Index</b>	110	120.8	121.5	126.67	130
<b>Food Price Index</b>	114	134.1	135.4	141.81	144.57

Source: (PCBS – Base year 2004 / \* 2011 data based on a 6 month average.)  
(NAF, 2011)

**Annex 4:****Food Prices and Quarterly change from last 5-year (% change)**

Quarterly change from last 5 year (%change) Q2 2011-Q2 2005	Quarterly change from last year (%change) Q2 2011-Q2 2010	Monthly change from last year (% change) Jun11-Jun.10	Current Price Jun.11	Region	Food Items
<b>Vegetables &amp; fruits</b>					
NA	NA	NA	NA	West Bank	Big size orange
NA	NA	NA	NA	Gaza Strip	
58.0%	40.8%	43.7%	5.05	West Bank	Medium size banana
81.8%	47.5%	30.8%	4.71	Gaza Strip	
43.9%	-6.4%	-4.4%	6.53	West Bank	Red Apple
78.4%	10.8%	14.0%	6.54	Gaza Strip	
-8.1%	-23.0%	-10.0%	2.25	West Bank	Green house tomato
43.5%	-14.9%	-35.0%	1.05	Gaza Strip	
43.7%	-2.3%	7.5%	2.80	West Bank	Local dry onion
85.5%	-0.1%	-9.3%	1.62	Gaza Strip	
45.9%	8.6%-	18.8%	3.73	West Bank	Cauliflower
44.8%	-15.4%	-26.9%	2.03	Gaza Strip	
32.1%	-4.3%	-6.1%	2.43	West Bank	Greenhouse cucumber
91.0%	-7.6%	-5.0%	1.74	Gaza Strip	
19.1%	-10.1%	-23.2%	2.66	West Bank	Medium size potato
104.2%	15.1%	-33.9%	1.33	Gaza Strip	
<b>Staple Food</b>					
38.4%	-18.9%	-16.8%	113.5	West Bank	Short grain profiled rice
57.5%	-11.8%	-9.4%	140.0	Gaza Strip	
52.2%	14.3%	-21.5%	167.1	West Bank	Haifa white flour
40.7%	-13.8%	-9.1%	146.7	Gaza Strip	
34.3%	4.5%	9.7%	4.0	West Bank	White bread
43.0%	-4.7%	-4.7%	2.9	Gaza Strip	
83.4%	-17.1%	-19.2%	29.6	West Bank	Olive oil
46.3%	-4.4%	-4.1%	30.8	Gaza Strip	
0.0%	-9.9%	-5.4%	26.4	West Bank	Corn oil
0.0%	-40.5%	-40.8%	25.0	Gaza Strip	
76.9%	1.1%	5.4%	8.0	West Bank	Lentils
166.7%	33.3%	33.3%	8.0	Gaza Strip	
47.6%	10.1%	5.2%	7.9	West Bank	Chick beans
39.2%	-2.3%	-0.4%	6.8	Gaza Strip	
91.2%	19.3%	19.7%	4.7	West Bank	Fine White sugar
71.9%	30.3%	24.6%	4.5	Gaza Strip	
16.9%	8.8%	4.0%	1.8	West Bank	White table salt
-7.7%	-5.8%	-3.6%	1.0	Gaza Strip	

Quarterly change from last 5 year (%change) Q2 2011-Q2 2005	Quarterly change from last year (%change) Q2 2011-Q2 2010	Monthly change from last year (% change) Jun11-Jun.10	Current Price Jun.11	Region	Food Items
<b>Animal Products</b>					
32.8%	11.5%	14.5%	15.0	West Bank	Chicken eggs
48.2%	11.7%	12.8%	14.7	Gaza Strip	
68.2%	-2.2%	-2.4%	68.9	West Bank	Fresh goat meat with bones
17.2%	-5.4%	-9.6%	52.5	Gaza Strip	
58.6%	12.1%	10.3%	52.6	West Bank	Fresh beef meat
56.3%	-2.5%	-4.0	48.0	Gaza Strip	
50.6%	3.5%	4.6%	15.3	West Bank	Fresh chicken without feathers
64.4%	-6.6%	-2.5%	13.0	Gaza Strip	
-46.8%	-45.3%	-46.7%	15.3	West Bank	Fresh red snapper
-2.6%	-18.5%	-21.3%	20.0	Gaza Strip	
48.5%	22.0%	9.6%	25.3	West Bank	Frozen fish
54.8%	22.0%	18.5%	16.0	Gaza Strip	
<b>Dairy Products</b>					
23.1%	2.2%	5.3%	6.8	West Bank	Pasteurized milk 3% fat
44.8%	4.9%	6.9%	7.8	Gaza Strip	
18.9%	-1.5%	-1.7%	96.5	West Bank	Powdered milk
13.1%	-3.6%	-3.4%	91.8	Gaza Strip	
58.7%	27.5%	25.95%	31.8	West Bank	Powdered milk kiko(No.1)
37.2%	26.9%	47.5%	29.5	Gaza Strip	
34.8%	9.4%	12.1%	4.9	West Bank	Yogurt
40.0%	0.0%	0.0%	7.0	Gaza Strip	
20.6%	-1.8%	-2.9%	8.1	West Bank	Labaneh
15.7%	1.1%	4.3%	8.2	Gaza Strip	
0.0%	0.0%	0.0%	27.2	West Bank	White boiled goat cheese
0.0%	0.0%	0.0%	25.0	Gaza Strip	



## **CHAPTER Seven**

# **Pollution and Solid Waste Management**

*Prepared By: Dr. Tahseen Saya'ra*

## Chapter Seven: Pollution and Solid Waste Management

### 1. Introduction

Solid wastes refer to a variety of discarded solid and semisolid materials, not liquid or gases, which are deemed useless or worthless (Weiner and Matthewa, 2003). The discarded materials include waste from homes, shops, public places, hospitals and other community services. Municipal solid waste (MSW) which consists of all materials discarded by the community represents the major part of the produced solid waste, whereas "refuse" which is the fraction of MSW produced in domestic household is mostly food waste (Weiner and Matthewa, 2003).

In response to rapid global urbanization and industrialization, the amount and variety of generated waste is continuously increasing, and handling and disposal of these wastes are regarded as an urgent need for societies; especially given that providing attainable standard of life is recognized as a human right. This is well defined in the *International Covenant on Economic, Social and Cultural Right (1966)*. This right is explicit in article 11(1)- the right to an adequate standard of living, and article 12- the right to the highest attainable standard of health. There is no doubt that improper solid waste disposal is a problem, especially given that these wastes cause several public health and environmental problems. Accordingly, solid waste management which can be defined as, " the discipline associated with the control of generation, storage, collection, transfer, processing and disposal of solid waste, in a way which is governed by the best principles of public health, economics, engineering, aesthetics and other environmental considerations", has been developed worldwide to deal with this important issue (Daskalopoulos et al., 1999).

In developed countries, more attention has been paid to deal with problems raised from waste generation, especially because of public concern regarding the adverse effects of these wastes. For example, in the United States of America (USA) and European countries, several legislations have been issued to regulate the solid waste management. Spontaneous fires and the spread of diseases from solid waste dumping sites led to the prohibition of open dumps after 1980, in conformance with the *Resources Conservation and Recovery Act (RCRA)* of 1976. Since then, sanitary landfill has become the most common method of disposal, because it is reasonably inexpensive and is considered to be environmentally sound. However, this is not the ultimate solution to the solid waste disposal problem. Consequently, several treatment methods including biological, chemical, thermal (and others) were developed and employed in the last decades. In the European Union, the "Landfill Directive", more formally *Council Directive 1999/31/EC* of 26 April 1999 on the landfill of waste, issued to be implemented by its member states. The Directive's overall aim is "to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from the land filling of waste, during the whole life-cycle of the landfill" (Nicholas, 2003). This Directive (1999/31/EC) has become the most influential piece of waste management legislation to have been produced for some time and calls for a reduction in the amount of biodegradable municipal solid waste disposed of to landfill. Moreover, the Directive proposed that the national solid waste strategies need

to be changed or modified to meet the targets set in the directive; which are to increase recycling and recovery of wastes. Also the Incineration directive (*Directive 2000/76/EU*) aims at preventing and reducing pollution of air, water, soil and damage to human health by incineration (Nicholas, 2003).

In the occupied Palestinian territory (oPt), the population growth, which is approximately 3%, (PCBS, 2010) and the development of lifestyle have resulted in an increase in the amount of the solid waste being generated. Fortunately, comprehensive-integrated strategy for solid wastes management has been recently developed and is currently under implementation in an attempt to decrease the adverse effects which result from mismanagement of these wastes (PNA, 2010). However, Israeli occupation forces and the political situation still represent a real obstacle against the development of a solid waste management system in the oPt. The Israeli blockade, checkpoints, curfews, and the construction of the Segregation Wall (and other restrictions), have repeatedly prevented access to dumping sites and/or the municipal level collection of solid waste. These actions have not only restricted the provided services, but have also resulted in a deterioration in the health and hygiene conditions; i.e. the prevalence of bad odours, spreading of litter, etc. In fact, such violations are all against international law, concerning peoples living under occupation. As an occupying power, Israel holds the primary responsibility to provide the services needed for solid waste management for people living within the occupied territory. However, the issue seldom gets the attention it deserves by the Israelis. On the contrary, in most cases, Israel has found a cheap and easy way to get rid of its own wastes in the oPt; mainly waste which includes hazardous materials (PCBS, 2009). Over the past 30 years, management of solid waste at all stages i.e., collection, transportation and disposal has not been given enough attention from the Israel. The pressure on the Palestinian environment from solid waste management practices is further intensified by the considerable amount generated by Israel settlers. Solid waste from Israeli settlers is dumped without restrictions on Palestinian lands and fields (PCBS, 2009).

## **2. Overview of legal and Institutional framework**

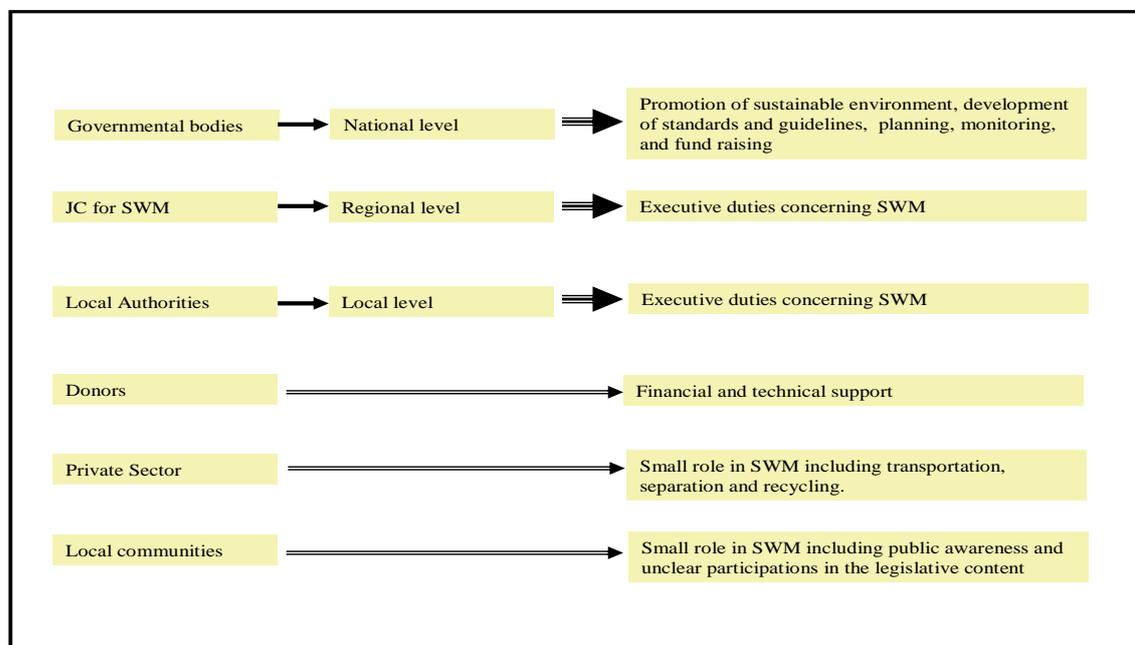
According to article 15 of the Palestinian Local Authorities Law no. 1 (1997), solid waste management is the responsibility of the local authorities within their boundaries. They are responsible for the collection of waste from streets, houses and public stores as well as for the transportation and disposal of the collected waste. The Ministry of Local Government (MoLG) has the overall responsibility for the relevant functions of local authorities, including planning and provision of services, and is the primary body managing such responsibility in the oPt.

In accordance with Article (15) of the Palestinian Local Authorities Law number (1) (1997), Joint Councils were established to provide local authorities with one or more common services, with the aim of improving the quality of services in a cost effective manner; taking into consideration geographic proximity and demographic relations amongst the various communities. With regards to solid waste management services, 21 Joint Services Councils for Solid Waste Management (JC for SWM) have been established in the West Bank, and two in the Gaza Strip (PNA, 2010). The JCs for

SWM act in compliance with the Joint Services Councils Bylaw number (1) (2006), according to which each of them should develop its own internal bylaws and regulations that govern their work.

Whilst the MoLG and its local authorities play the major role in solid waste management practices in the oPt, other ministries on the national scale share environmental responsibilities with it (PNA, 2010a). In this regard, the Environmental Quality Authority (EQA) (previously named the Ministry of Environmental Affairs (MEnA)), is responsible for promotion of the sustainable environmental development of Palestinian society, development of standards and guidelines for environmentally sustainable conditions (although much subsidiary legislation is still not developed), licensing of sites, environmental monitoring, provision of expertise and ensuring environmental protection. The Ministry of Planning and Administrative Development (MoPAD) is responsible for the overall planning and fund- raising regarding the proposed projects. Also, the Ministry of Health has performance standards on solid waste and wastewater treatment, and has an Environmental Health Department which carries out research and data collection on water, air, hazardous waste and pollution. Figure 7.1 presents the institutional framework and partners who are responsible for the SWM in the oPt.

In the refugee camps, the United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA) is responsible for most waste management; using its own equipments and materials, but normally using disposal sites operated by local authorities (UNEP, 2003)



**Figure 7.1: Institutional framework and the different partners responsible for the SWM**  
Source: PNA, 2010a.

It is worth pointing out that as a result of the current political crisis and related Israeli security measures; such as closures, curfews and the construction of the Segregation Wall, the central responsibilities among the different ministries are largely inactive

and thus the way for managing the solid waste doesn't satisfy the expected objectives of sustainable development.

### **3. National effort to develop solid waste management conditions**

As mentioned before, solid waste management within the oPt has seldom been given the attention it deserved by the Israeli occupation. On the contrary, throughout the occupation period, Israeli action has resulted in various environmental problems. The Palestinian environment has been ignored through lack of regulations, combined with insufficient investment in the infrastructures needed to develop this sector. This behavior from the part of Israel ignores the Palestinian rights since promoting and protecting the environment is directly linked with the promotion and protection of human rights, which fall in the context of sustainable human development, established in Stockholm Declaration (1972), "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being."

After the establishment of The Palestinian National Authority (PNA), various efforts have been directed to accommodate issues concerning the environment in attempt to substitute their shortage, with proper planning and adequate laws /policies regarding the waste management sector. The Palestinian Environmental law no. (7). was approved by the Palestinian Legislative council in 1999 (MEnA, 1999). The first chapter of the second section of this law deals with issues related to solid waste through several articles; specifically articles (7-10) of the same law. Furthermore, the PNA, in spite of Israeli restrictions has worked to develop the environmental sector such that the approved laws were followed by several steps to create a sustainable solid waste management system to achieve the most necessary improvements. In fact, the created JCs for SWM have developed the provided services but still achieving optimal results in this field, requires further efforts and funding (MoLG, 2004). Presently, JCs for SWM in the West Bank are responsible for the main sanitary landfills (Zahrit Al finjan (in operation), Ramoun (planned) and Al Minya (under construction). Nevertheless, information about the situation in the Gaza strip is not fully available due to the current political situation and discontinuity; but three main sanitary landfills were in operation to serve the area. These landfills are: Jaher Al-Dik, Deir Al-Balah and Rafah landfill. Jaher Al-Dik has liner and leachate collection system, but Deir Al-Balah and Rafah lanfills were built on impermeable ground without liner (Al-Najar, 2004).

**Box 1*****The Palestinian Environmental law no. (7): Solid Waste******Article (7)***

The Ministry, in coordination with other specialized agencies, shall set a comprehensive plan for solid waste management on the national level, including the ways and the designation of sites for solid waste disposal as well as the supervision to implement this plan by the local councils.

***Article (8)***

The specialized agencies, along with their respective specialization, shall encourage undertaking appropriate precautions to reduce the generation of solid waste to the lowest level possible; re-use it as much as possible, recover its sources and recycle it.

***Article (9)***

The Ministry, in cooperation with the specialized agencies, shall determine the standards of solid waste disposal sites.

***Article (10)***

All agencies and individuals, in conducting any digging, construction; demolition, mining or transportation of debris and sands generated by such activities, shall commit themselves to take all necessary precautions for safe storage and transportation of such materials to prevent any environmental pollution.

The PNA has also developed the, ‘Palestinian Environmental Strategy’ (2000-2003) in cooperation with Netherlands Development Agency, whereby solid waste management was recognized as one of the most urgent environmental priorities needing to be improved to reduce the environmental impacts resulted from mismanagement of these wastes. After that, the National Environmental Action Plan (NEAP) was developed based on the previously developed strategy and sets out actions and projects necessary to solve or alleviate the environmental problems in the oPt. Unfortunately, the implementation of the proposed environmental projects in the NEAP faced several impediments associated with the practices of the Israeli Occupation Authorities that have been intensified after the outbreak of the second Intifada in September 2000. In this regard, the geographical discontinuity that has been created between communities under Palestinian control through the implementation of the Israeli segregation plans and the construction of the Segregation Wall have hampered the implementation of several centralized projects related to the management of solid waste (ARIJ, 2007).

Ultimately, and according to the Palestinian Ministerial Cabinet decision No, 53 (2008), a National Strategy for Solid Waste Management (NSSWM) was issued. The document was produced and endorsed by the Ministerial Cabinet on May 16, 2010. The project was supported by the German Federal Government, through the German Technical Cooperation (GTZ) solid waste management programme. This new strategy aims at setting the development path for the Palestinian solid waste management (SWM) until 2014. The vision, strategic objective and sectoral policies set by the strategy are aligned with the national development goals and common vision for

establishing a Palestinian State according to the 2009 plan: "Palestine- Ending the occupation and Establishing the State".

### **Box2**

The NSSWM aims at addressing key strategic issues, developing the legislative, organizational, technical and economical foundation needed to achieve an efficient and effective SWM system, in addition to reducing the negative health and environmental impacts of solid waste in response to priority issues and mid-term needs (PNA, 2010).

This national strategy is considered as the first cross-sectoral strategy for solid waste management in oPt. It constitutes the reference point and strategic framework for all decisions, programs, activities and medium term investment plans, aiming at developing the solid waste sector in the next years (PNA, 2010b).

### **Box 3**

#### ***Legislations concerning Solid Waste Management***

##### ***Local government law No. 1 of 1997***

Describes the roles and responsibilities of the local authorities within their jurisdiction, the law clearly shows that solid waste management is the responsibility of these local authorities.

##### ***Environmental law for 1999***

Reduction of the negative effects resulted from the Solid Waste and providing the legislative related to Sanitary landfills, forbidding waste burning and encouraging reusing and recycling of solid wastes.

##### ***Public health law No. 20 of 2004***

Describes the regulations concerning solid waste management, roles of hazardous waste management and ensuring health conditions.

The 2002 World Summit on Sustainable Development, held in Johannesburg specifically commits to, "*assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development, economical development, social development and environmental protection at the local, national, regional and global levels*".

Unfortunately, the political situation and illegal Israeli measures in the oPt normally stand against the planning and implementation of several projects (especially in area C) and hinder promoting any foreseeable sustainable development. The PNA tries to improve the situation and some improvements have been observed, and yet, more efforts are being directed to develop the provided services. However, the PNA still suffer from the limited sovereignty on the land. For instance, it doesn't have the right

to plan or implement any project over land in area C as it is out of its control (civilian and military control) and even in area B, where the PNA has the civilian control, but permits must be obtained from the Israeli authorities for these projects.

#### 4. Current Status of Solid Waste in the oPt

The UN General Assembly, in its 1994 Resolution 45/94, had already recognized *"that all individuals are entitled to live in an environment adequate for their health and well-being"*. However, the Israeli occupation has always ignored this right and destroyed the Palestinian environment. Solid waste management was never considered in their agenda, in so far as no sanitary projects or equipments have been provided by them to local Palestinian authorities. This situation for sure has resulted in several problems regarding the various components of the environment including; air pollution, water contamination, bad odors, etc which requires spending substantial effort and funds to improve the solid waste management situation. The PNA has worked to develop the sector in an attempt to compensate the lack of infrastructure services and equipment in several localities. Different projects in cooperation with external donors have been conducted throughout the oPt. Equipments were supplied to several local authorities, and projects like sanitary landfills were implemented also. However, this sector still needs more projects and further funding to achieve and reach sustainable development.

##### i. Waste generation

According to the Palestinian Central Bureau of Statistics (PCBS) census, the total population of the oPt in 2010 was estimated at 4.1 million, and approximately 1.37 million tons of solid waste was generated in the same year (2010). Estimates indicate that household wastes account for about 45-50% of the total solid wastes and this percentage is in agreement with previous studies (Al-Hmaid, 2002). Hazardous materials are to some extent present in all of these wastes, although such material is only a significant component of industrial and hospital waste. There is virtually no separation of hazardous waste in the oPt, except for some limited treatment of infectious waste. In fact, hazardous waste is mixed with municipal solid waste during both collection and disposal phase.

The average per capita solid waste generation rate in the oPt is approximately 0.91 kg/day (PCBS, 2010). Table 7.1 shows the total amount of the generated solid waste in the oPt for 2007 and 2010. A slight increased upward trend in the generation of SW could be observed in the last years which is in accordance with the population increase beside the slight development in the social and economical life. Based on the 2001-2002 survey and the assessment survey concerning solid waste in the oPt, the average solid waste generated was 0.426 kg/capita/day (Khatib and Al-Khateeb, 2009). The numbers show the gradual increase in the amounts of SW produced. In fact, the numbers demonstrate the need for adapting suitable technologies to get rid of the generated waste to achieve sustainable development. Also, worth mentioning is the oPt's "developing country" status which means waste generation is expected to increase with time along with population increase, social and economical

development. Nevertheless, one should in mind that Israeli measures always stand against any development, and they have a systematic policy to destroy Palestinian properties.

**Table 7.1: Solid waste generation in the oPt for the year 2007 and 2010.**

Governorate	Population (2007)	Total SW generation (ton/day)	Population (2010) (projected)	Total SW generation (ton/day)
Jenin	256,619	236.2	277,578	255.5
Tubas	50,261	48.9	55,703	54.2
Tulkarm	157,988	153.7	167,382	162.9
Nablus	320,830	297.6	344,070	319.1
Qalqilya	91,217	83.3	98,730	90.2
Salfit	59,570	49.4	63,882	53.0
Ramallah & Al-Bireh	279,730	252.6	305,757	276.1
Jerich & Al-Aghwar	42,320	41.2	46,076	44.8
Jerusalem	138,233	121.4	144,740	127.2
Bethlehem	176,235	171.5	191,487	186.3
Hebron	552,164	556.6	610,391	615.3
<b>West Bank</b>	<b>2,125,167</b>	<b>2,012.4</b>	<b>2,546,725</b>	<b>2,184.6</b>
North Gaza	270,245	274.3	303,351	307.9
Gaza	496,410	477.8	543,195	522.8
Dier El Balah	205,534	215.2	226,778	237.4
Khan Younis	270,979	279.2	296,438	305.4
Rafah	173,371	179.9	192,144	199.3
<b>Gaza Strip</b>	<b>1,416,539</b>	<b>1,426.3</b>	<b>1,561,906</b>	<b>1,572.9</b>
<b>oPt</b>	<b>3,541,706</b>	<b>3,438.7</b>	<b>4,108,631</b>	<b>3,757.5</b>
<b>oPt Total ton/year</b>		<b>1,255,144.3</b>		<b>1,371,473.5</b>

Source: PCBS, 2010

Comparing the SW generation rate in the oPt, which is 0.91 kg/capita/day (Table 7.1) with the developed countries, this rate is considered small. For instance, in the USA per capita generation rate is 2 kg/day, and in Israel is 1.7 kg/day. However, per capita the generation rate in the oPt is similar to those rates observed in other developing countries (Al-Khatib and Arafat, 2010).

Interestingly, it should be remarked that waste generation and its management is also influenced by political, legal, socio-cultural, environmental, economic factors and available resources. These factors have interrelationships that are usually complex in waste management systems (Abu Qdais, 2007; Kum et al., 2005). Obviously, the current situation in the oPt has greatly influenced the waste generation rate which is in agreement with the aforementioned judgment. In this regard, waste generation in the oPt varies according to the community classification (Table 7.2), i.e. urban or rural, 1.05 kg/capita/day and 0.7 kg/capita/day respectively. The highest rate was found in the urban communities or the main cities, which could be attributed to the higher living standards and economic activities compared to the rural communities. Also, family size and income level highly affect solid waste generation rate in the sense that

large family size with low income produce less waste and vice versa (Al-khatib and Arafat, 2010). It is estimated that the average Palestinian household produces almost 4.6 kg/day of solid waste (PCBS, 2010).

**Table 7.2: Solid waste generation based on locality classification for 2010**

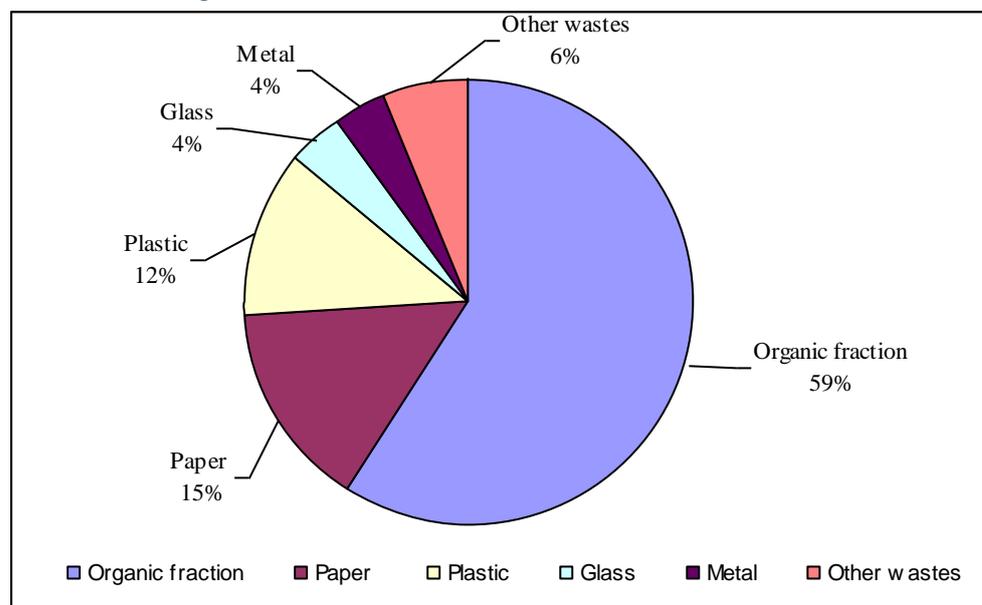
Locality classification	Population (2010)	SW generation (ton/day)
Urban	3,000,201	3,150.2
Rural	867,501	607.25

Source: ARIJ database, 2011

Per capita SW generation rate for urban and rural communities was calculated as 1.05 kg/capita/day and 0.7 kg/capita/day respectively.

### ii. Physical composition of solid waste

Physical composition of the solid waste plays a major role in management of such materials, since the characteristics and components of them are used to determine the best way to handle it. However, solid waste composition varies from one community to another (Table 7.2) as well as with time in any community. The oPt is still under Israeli occupation which controls all the Palestinians activities, with this control restricting the developing of several industries and commercial activities. Accordingly, the generated wastes are mostly driven from municipal waste which fundamentally comes from households (about 50%). Food waste or organic fractions represents the major part of the generated wastes, and it accounts for almost 60% of the generated SW although other studies indicated higher percentage of this fraction (Al-Khatib and Arafat, 2010). The remaining part consists of paper, carton cardboard, plastic, glass, metals, wood and other waste. The percentages of these components are illustrated in Figure 7.2



**Figure 7.2: Physical composition of solid waste in the oPt.**

Source: ARIJ, 2009a

As previously pointed out, gross composition of solid waste may be the most important characteristic affecting the SW disposal, or the recovery of materials and energy from refuse. In fact, to move from landfill-based to resource-based

management approaches requires a great knowledge of the composition of the municipal solid waste (Stephen, 2006). The resource-based approach principally depends on the 3Rs (reduce, reuse and recycle) such that the waste is to be processed through one of the 3Rs options and used again for beneficial purposes. This approach aims at optimizing SW management. It is a new approach which helps to minimize the amount of waste from generation to disposal, thus managing the waste more effectively and minimizing any risks associated with it. However, a landfill-based approach only assimilates the waste by covering it with a layer of soil so that its impact on the both the environment and humans is reduced. In the Palestinian's case, the availability of high organic fraction provides the ability to recycle such part through biological treatments including composting and anaerobic digestion. Composting technology would be more feasible for the Palestinian condition as it is recognized as cost-effective technology compared with anaerobic digestion. Nevertheless, the latter technology could provide the ability to convert the produced biogas (methane) to electricity. However, the high cost of establishing and operating such option is an obstacle especially with current Palestinian conditions.

### iii. Waste collection

Waste collection forms part of the essential services for providing health environment as stated in Chapter 6 of Agenda 21(1992) of the Rio Conference on Environment and Development, is entirely devoted to "*protecting and promoting human health condition.*" However, the Rio Declaration itself (Principle 1) proclaims that human beings are entitled to a healthy and productive life in harmony with nature and provides that states should effectively cooperate to discourage or prevent the relocation and transfer to other states of any activities and substances that, *inter alia*, are found to be harmful to human health.

Interestingly, in the oPt, the number of non served communities was 166 according to PCBS 2005, however the number has decreased to 79 in 2010 (Table 7.3), which shows the improvement in the provided services. Currently, around 85 % and 100% of the households receive solid waste collection service in the West Bank and Gaza Strip, respectively (PCBS, 2010), whereas about 50% of the households receive this service three times or less per week (Al-Khatib and Arafat, 2010).

**Table 7.3: Responsible entity for solid waste collection**

	<b>Responsible entity</b>	<b>West Bank</b>	<b>Gaza Strip</b>	<b>oPt</b>
Entity that collect solid waste	Local authority	334	25	359
	Contractor	26	0	26
	UNRWA	20	8	28
	Other local authority	50	0	50
	Others	15	0	15
No collection service		79 (39642 person)	0	79
<b>Total</b>		<b>524</b>	<b>33</b>	<b>557</b>

Source: PCBS, 2010

Although the solid waste service is available, the collection frequency in some communities is considered inadequate, such that waste piles of begin to form. This piled waste attracts several animals which disturb people and spread the waste in the

streets or roads. A representative example of solid waste generation and collection can be reviewed in details in the study conducted by ARIJ (Feasibility Study for Solid Waste Management Managed by the Joint Council for SWM Instead of Municipalities in three Governorates: Tulkarm, Bethlehem and Salfit, 2009), where a complete explanation of the current situation in these three governorates is presented.

Solid waste collection services are mainly (74%) the responsibility of the local authorities (municipality, village council and or joint council) (PCBS, 2010), but in some localities private contractors or other entities are responsible for the collection process (Table 7.3). Local authorities levy charges on the served people as solid waste management fees and this forms part of the solid waste management cost recovery policy. However, these fees do not cover the total services costs (only a marginal contribution), and thereby the authorities normally suffer from providing this service especially with the unstable economical situation and high rate of unemployment (23.7%) (PCBS, 2010). This has resulted in the accumulation of debts. For instance, in Nablus governorate the municipality should collect 40% of solid waste management costs according to the charged levy, however, the collected revenues cover 20% of the incurred cost as only 50% of the citizens pay the charged fee (ARIJ, 2009b).

Furthermore, in the study conducted by ARIJ (Feasibility Study for Solid Waste Management Managed by the Joint Council for SWM Instead of Municipalities in three Governorates: Tulkarm, Bethlehem and Salfit, 2009), it was found that only 60%, 72%, and 50% (average values) of the solid waste charged levies are collected in Tubas, Salfit, and Bethlehem, respectively. The situation is similar in almost all local authorities where 100% collection rate is far from being achieved. In the refugee camps, the UNRWA carry out this duty using its own equipment and management approach, and normally uses disposal sites of the local authorities.

Solid waste from homes, institutions, shops, etc, is usually collected manually with plastic bags and transported to the steel containers (ranging in capacity between 800-1000 liters) or dumpsters (with capacities ranging between 5-6 cubic meters). These are distributed in the cities and towns to be later transported by compactors or trucks to the dumping site or the transfer station, which form part of the collection system. This is the case for main cities and big towns, but for small villages, the service is different as there are neither containers nor compactors for waste collection. People in these communities use door to door manual collection and tractors to collect the wastes, in most cases, once a week. . Route optimization for the collection process is normally ignored in the solid waste collection and this results in insignificant cost saving as well as increased ineffectiveness. Cost-cutting routes and collection frequencies should be adapted to optimize the provided service. Nevertheless, Israeli actions including closure, checkpoint and others have resulted in the use of alternative routes to reach destinations; thereby increasing transportation distances and operational costs. Additionally, during Israeli invasion, local authorities could not provide waste collection services which resulted in accumulation of these wastes in the streets (Photo 7.1) causing several problems like spread of diseases, bad odors, spread of flies, etc. Also, under closure conditions, local authorities are obliged to create emergency dumping site to dispose of their waste and normally these sites are close to the houses which causes various health and environmental problems.



**Photo 7.1: Accumulation of solid waste in the street**

Source: ARIJ photo courtesy, 2009

#### **iv. Solid waste disposal**

Solid waste disposal is the placement of the waste so that it no longer impacts society or the environment. The waste is either assimilated so that it can no longer be identified in the environment, as by incineration to ash, or it is hidden well enough so that it can not be readily found. Solid waste may also be processed so that some of its components may be recovered and used again for beneficial purpose. This is in accordance with providing attainable standard of life which is well defined in the International Covenant on Economic, Social and Cultural Right (1966). This right is implicit in article 11(1), the right to an adequate standard of living and article 12, the right to the highest attainable standard of health. However, in the oPt, lack of proper management and enforcement of solid waste along with the Israeli measures threaten the environment and public health as the relationship between solid waste and human diseases is intuitively obvious.

Dumping of solid waste in open, uncontrolled, unmonitored sites is the dominant method of waste management in the majority of local authorities in the oPt (Photo 7.2). It is estimated that more than 160 random dumpsites are distributed in the oPt; none of them were constructed or follow the environmental considerations (Al-Khatib and Arafat, 2010; PCBS, 2009). Normally, burning is used as a standard practice for waste volume reduction in these dumpsites regardless of the negative impacts resulted from this behaviour. Such burning of solid waste represents the most important source of exposition to smoke in the oPt where the percentage distribution of households exposed to smoke reach to 55.9 (PCBS, 2009).

Burning has been prohibited in developed countries for several decades because of its adverse effects. For example, waste disposal in open dump sites had been prohibited

since 1980 in the USA in conformance with RCRA of 1976 because of spontaneous fires and the spread of diseases. Additionally, the European directive 2000/76/EU was issued to prevent and reduce pollution of air, water, soil and damages to human healthy by incineration (Nicholas, 2003). These regulations are in accordance with the International Covenant on Economic, Social and Cultural Right (1966).



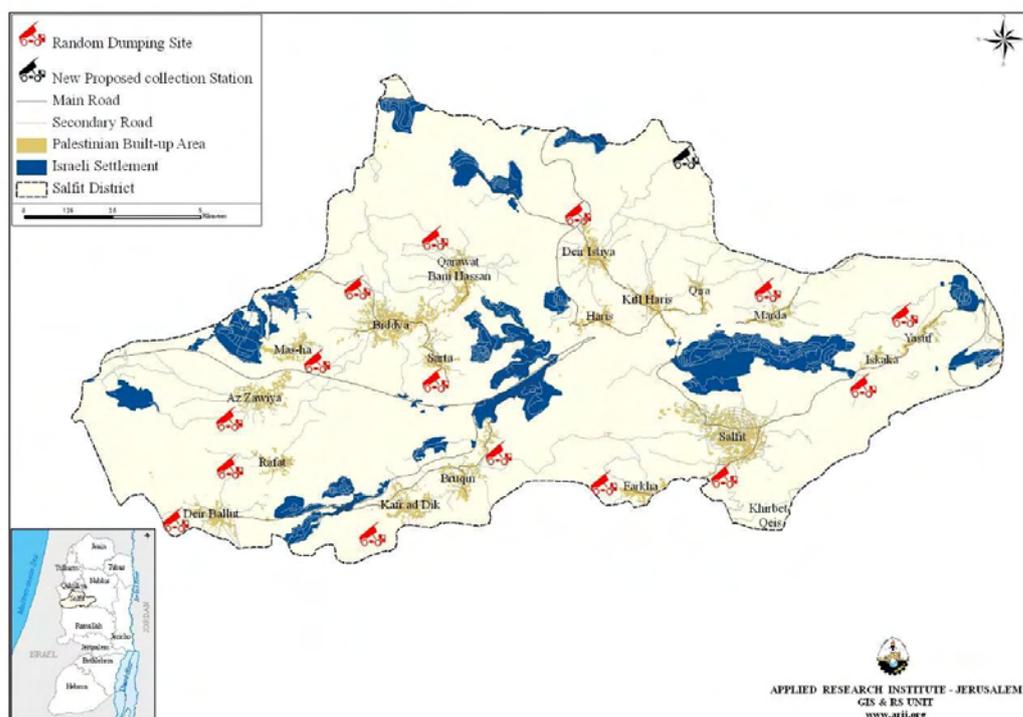
**Photo 7.2: Dumping of solid waste in open and uncontrolled sites.**

Source: ARIJ photo courtesy, 2009

The number of dumpsites has been increased after the second Intifada due to the imposed restriction on movement. For example in 2001 there were 137 dump sites in the oPt (PCBS, 2001), and more than 183 by 2006. However, the construction of new central projects like Zahrit El finjan has reduced these random dump sites. Furthermore, the projected cost of diseases arising from the improper management of solid waste in the West Bank over the course of the next 20 years was estimated at 909 million USD (ARIJ, 2005).

The misguided disposal of waste causes several problems for the ecosystem including; soil, water, air, etc, through leachate infiltration. In this regard, Friends of the Earth Middle East (FoEME) released an investigative report several years ago called 'A Seeping Time Bomb, Pollution of the Mountain Aquifer by Solid Waste'. According to this report, unsustainable disposal of solid waste has resulted in the percolation of toxic substances including chloride, arsenic and heavy metals such as cadmium, mercury and lead into the groundwater. Furthermore, the results obtained by Alslaibi et al, 2011, for Dier Al Balah and Gaza landfills demonstrated that most of the investigated wells were contaminated by leachate and the concentration of contaminants were above the acceptable standard levels. In this context, it is worth highlighting that the projected cost of diseases arising from the improper management of solid waste in the West Bank over the course of the next 20 years was estimated at 909 million USD (ARIJ, 2005).

In attempt to reduce the problems associated with the numerous uncontrolled dump sites, the PNA through the MoLG has encouraged the formation of JCs for SWM. For instance in Salfit governorate, the waste collected from Deir Istiya, Qira, Kifl Haris, is transferred to a shared dumping site for the JCspd –East Salfit which is located in Deir Istiya (Map 7.1), and the idea of the JCspds has been generalized among the oPt.



**Map 7.1: Location of solid waste disposal sites used by local Authorities and joint council of east Salfit.**

On the National scale, the PNA in collaboration with different donors, has recently implemented some regional projects through constructing sanitary landfills, however, still more efforts and projects need to be made to resolve this issue. Sanitary landfill methods have been introduced to minimize the adverse effects of solid wastes disposal (NSSWM 2010-2014). The sanitary landfill contributes in solving or reducing the waste impacts since they are engineered operations, designed and operated according to acceptable standards, but the 3R approach need to be introduced in the SWM plan.

**Box 4**  
**NSSWM (2010-2014)**

*Strategic objective three:* effective and environmentally-safe management of SW services.

*Policy (5):* safe and efficient disposal of SW in regional sanitary landfills servicing all communities.

*Policy (7):* prohibiting the use of random dumpsites and closing or rehabilitating the existing sites to limit their environmental and health risk

Zahrit El-Finjan sanitary landfill in Jenin, (currently in operation) has yielded positive results in comparison with previous conditions. This project was constructed in cooperation between the PNA and the World Bank in 2008, and cost 14 million dollar in order to close the random dumpsites. The total area of the project is 240,000 square meter with a total capacity of 2.25 million tons of waste. Currently, 900,000 square meter of the total area has been dedicated for waste cells to serve the northern governorates for about 15 years during the first stage of the project (Al Sa'di, 2009). However, the waste cell is to be extended over the available area to serve more localities in the northern part of the oPt. It is worth pointing out that around 85 open and uncontrolled dumpsites in Jenin and Tubas were closed and rehabilitated after operating this project, and this provided freeing up of 1,200 dunums of rehabilitated land which can be used for other purposes (Al Sa'di, 2009). Despite this project representing an independent phase (disposal), advantages were gained from applying proper management of SW. However, if an integrated plan would be employed, more environmental, social, and economical benefits could be achieved.

Two sanitary landfills have been planned in the West Bank; Al Maniya and Ramoun. Al-Maniya has been designed to serve the southern part of West Bank, mainly Hebron and Bethlehem governorates, and will replace the current Yatta unsanitary dumpsite and others. In this context, a JSC "higher council" was established on April 2008, which involved all local communities in both governorates. This area will be served by a joint landfill and SWM improvement project, whereas the higher council will provide an organizational mechanism for cost sharing and pooling of resources by municipalities and village councils. It is important to mention that El-Minya master plan recently (March 2011) received full approval from the Israeli Civil Administration subcommittee for environmental affairs, and officials are now in the process of issuing permits for the site and the access roads. It is worth also remarking that obstacles were created by Israeli authorities, who delayed the project's implementation, for example their refusal to grant licenses as the project lands fall within area C which is under the Israeli control. In terms of Ramoun, this project will serve all communities in Ramallah and Al-Bireh Governorate. The JSC of Ramallah is expected to submit the master plan of the project to obtain the Israeli Civil Administration admission which, for sure, will delay the project implementation for several months or even years. In the Gaza strip, the situation is different because of land scarcity which hampers the construction of new sanitary landfills. Therefore, local authorities there attempt to expand the existing ones as far as possible. In this

regard, Rafah Municipality has been planning to add 10 hectares for its sanitary landfill and to construct a composting plant. The story is the same for Deir El Balah and Jahr Al Deek sanitary landfills, which are trying to expand their capacity. Unfortunately, no decision has been taken yet regarding such expansion. Map 7.2 shows the location of sanitary land-fill sites within the oPt.



Map 7.2: Sanitary landfills in West Bank and Gaza Strip

## 5. Hazardous waste

Hazardous waste is any solid, liquid, or gaseous waste material that may pose substantial hazards to human health and the environment if improperly treated, stored,

transported, disposed of, or otherwise managed (Weiner and Mathewa, 2003). Thereby, this type of waste should be given special priority in the waste management plan.

The Palestinian environmental law (1999), through articles 11-13, presents the rules of hazardous waste management. According to article (12), no person shall be authorized to manufacture, store, distribute, use, treat, or dispose any hazardous substance or waste whether it was solid, liquid, or gas, unless such a process is in compliance with the regulations, instructions and norms specified by the Ministry, in coordination with the specialized agencies (MEnA, 1999). The law also indicates that classification and listing of hazardous materials should be done in coordination with other official institutions.

Medical waste is considered part of hazardous waste according to a draft of environmental law; issued by the Palestinian Legislative Council in 1999. These wastes include all waste materials generated at health care facilities, such as hospitals, clinics, physician's offices, dental practices, blood banks, and veterinary hospitals/clinics, as well as medical research facilities and laboratories (Hagen et al., 2001).

The Environmental Protection Agency (EPA) state that approximately 15% of medical waste is infectious, which can cause harm to people or the environment. This category includes items such as; bandages, surgical gloves, surgical instruments, needles and microbial dishes, cultures and cloths. If these materials penetrate the body, they can lead to serious diseases. Consequently, such waste must be managed and contained to avoid spreading infection, toxins and pollutants.

It is estimated that the amount of medical waste generated in the oPt in 2009 was 1,202 ton/month. 729.5 ton/month were generated in the Gaza Strip with the remaining being produced in the West Bank's health care centers (PCBS, 2009). The numbers show an increase in the generation rate comparing with 2006 where the medical waste generation was 426.1 ton/month (PCBS, 2006). Only 31% of the health care centers in the oPt completely separate the generated medical waste form their waste stream, whereas, the majority (69%) partially separate their waste (Table 7.4; PCBS, 2009). The separated waste is categorized and sorted into color coded bags or containers. Sharp waste is the most separated (about 90%) among the generated waste and radioactive is the lowest (1%). Considering health risks from radiation, this low percentage is alarming, and increased attention should be given to radioactive waste management (Al-Khatib and Sato, 2009; PCBS 2008).

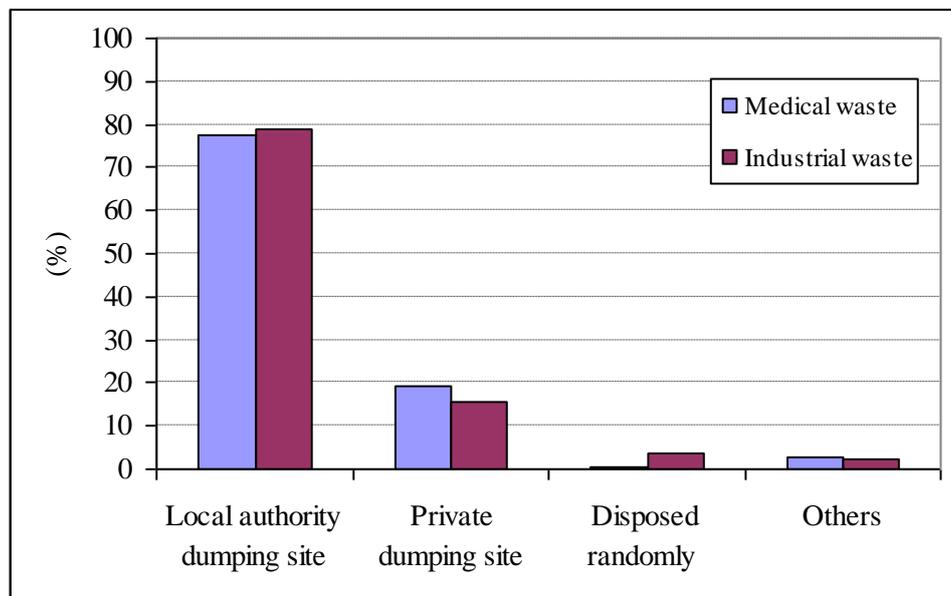
**Table 7.4: Separation of medical wastes**

	Separation (%)	Type of separation	
		Total (%)	Partial (%)
<b>West Bank</b>	51.7	29.8	70.2
<b>Gaza Strip</b>	39	33.9	66.1
<b>oPt</b>	48.1	31	69

Source: PCBS, 2008

Almost all of Medical waste are manually collected and transported to metal containers outside the building which later are collected (1-3 times weekly) by

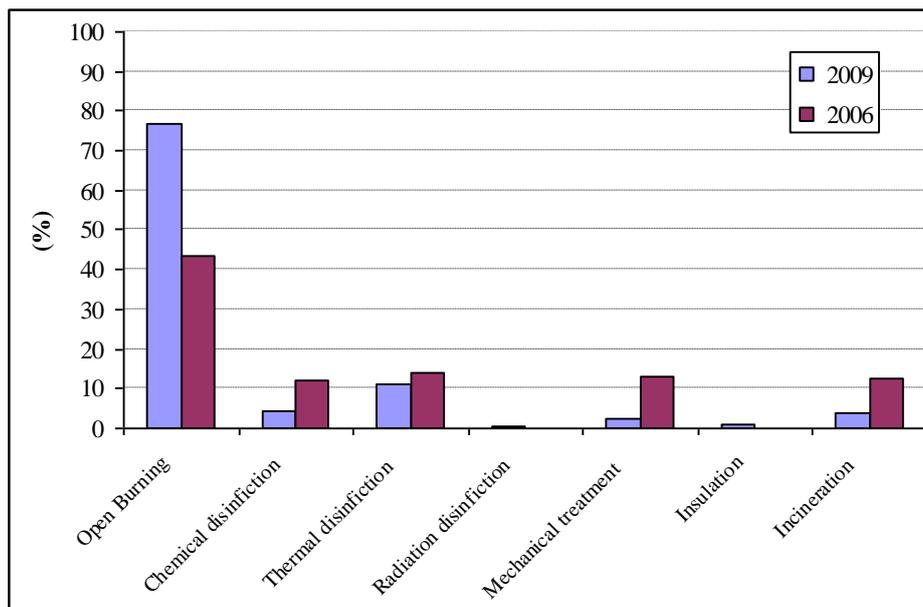
municipality trucks or compactors and finally disposed in the same dumping sites along with domestic wastes (78%) as illustrated in Figure 7.2 (PCBS, 2009). It is important to highlight that lack of separation is making the whole waste stream hazardous, and increases the rate of danger of solid waste. According to World Health Organization (WHO) regulation, waste generated from health care centers have to be contained and safe transported for treatment or final disposal site.



**Figure 7.2: Final disposal place of medical and industrial waste in the oPt**

Source: PCBS, 2009

In spite of their well-known hazard, medical wastes in the oPt are not treated properly. Failure to employ proper methods could be attributed to the lack of financial resources or awareness about this type of waste. As shown in Figure 3, open burning (77%) is the most common method used to treat medical waste (PCBS, 2009). In fact, this method releases large volume of hazardous pollutants such as carbon monoxide, lead, and mercury into the air which threaten the people's health and environment. The Thermal disinfection method is used by 11% of medical health care centers in the oPt. Although thermal method has minimum adverse effects on the environment, its use has been limited in the oPt because of its high capital, maintenance and operational costs (Al-Khatib and Sato, 2009; Massrouji, 2000). Chemical disinfection is used in 4.4% of health care centers. This type of treatment is effective but costly, as it requires well-trained personnel and adequate protective gear.



**Figure 7.3: Medical waste treatment in the oPt**

Source: PCBS, 2006, 2009

Part of the industrial sector waste stream contains hazardous materials. However, data is not available about the types and quantities of these wastes.

In general, the employed practices of hazardous waste management are similar to those used for ordinary waste. These practices are unsatisfactory, and do not meet the standards recommended by WHO or international bodies such as EPA. Consequently, more efforts should be directed to improve the management of this type of waste, starting from classification and listing of hazardous materials as this list has not been issued yet.

Over a period of time, highly radioactive waste from the Dimona Nuclear Facility (Israeli facility) has been dumped in the oPt; primarily at two locations. One is close to Hebron and the other in central Gaza (Eyre, 2010). When one adds to this the dumping of human waste, domestic waste, industrial waste and hazardous waste we are looking at a very lethal cocktail of underground contamination. It should be recognized that dumping hazardous waste in the oPt is against the UN Human Rights Commission 1991 Resolution 1991/44, which recognizes that "all individuals are entitled to live in an environment adequate for their health and well-being." The Commission also has a Special Rapporteur on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, whose mandate includes consideration of complaints.

All of the reported cases involve harm to human health as a result of the trans-boundary movement of hazardous materials; nearly always in violation of national and international environmental law. In 1998 the Bureau of the Commission recommended that the mandate of the Special Rapporteur on toxics and human rights be converted to a mandate on human rights and the environment (UN Doc. E/CN.4/1999/104, paragraph 20(b)). In its resolutions on this topic, the UN Commission on Human Rights now consistently recognizes that such environmental

violations also, "constitute a serious threat to the human rights to life, good health and a sound environment for everyone" (Commission on Human Rights, Resolutions 1999/23 and 2000/72). Accordingly, Israel's actions concerning this nuclear waste are prohibited, and abuses international legislation.

With the available solid waste practices in the oPt, it is important to remark that uncontrolled open burning of wastes also results in releasing of several hazardous gasses especially because the burned wastes are a mixture of all waste types from different sources. Dioxins and furans are released from open burning, especially from any polyvinyl chloride (PVC) contained in the waste. These hazardous substances cause long-lasting damage to the environment.

## **6. Assessment of Solid Waste Management in the oPt**

Proper SWM is one of the important issues because of its impact on the environment. Until present, no truly integrated and optimized management plan has been completely implemented regarding solid waste in the oPt. Waste management practices in the oPt are limited to the collection of the gross generated solid waste, transport and finally end up through dumping of collected waste in unsanitary disposal sites except the newly established ones like Zahrit Al Finjan. However, it is hoped that the new strategy (NSSWM 2010-2014) would improve the situation and provides better services. Assessment of the current practices concerning SWM in the oPt pointed out several issues which need to be improved as described in NSSWM 2010-2014 . For instance, the institutional framework still lacks effective and updated of legislatives governing the SWM sector, in addition to the insufficiency of financial, human, and organizational capacities of institutions involved in management of this sector. The absence of a comprehensive system for authentication and analysis of data are also represents a defect in the process management, meanwhile, the insufficiency of monitoring and evaluation system are not completely applicable.

Regarding the technical issues and despite of the financial assistance provided by several donors which has made important contributions to waste management in the oPt, this sector still need more investment in both the infrastructure and its management practices. In fact, there is a lack in the infrastructure and equipments needed to cope with the rapidly growing population The oPt further lacks a number of facilities and equipments including different types of containers of different sizes and solid waste collection vehicles. Also, it should be noted that most of the available collection containers and collection vehicles are old and obsolete (ARIJ, 2009a).The open dumping practice of solid waste management still widely spread in the oPt. This reflects the urgent need for closing or rehabilitation of these random dumpsites to avoid their environmental, health, and aesthetic impacts. Furthermore, there is a strong need for initiatives and expertise in the waste minimization, reuse and recycling, which would reduce the amounts of waste to be disposed of. Random and open dumping practice is inevitably degrading the Palestinian environment and poses a public health risk to a severe degree. Besides the spread of insects, rodents and noxious odors from open dumping sites, this practice causes contamination of water and soil by leachate since the bottom of these dumping sites are unlined by a geosynthetic membrane. The problem is therefore grave, since hazardous waste is

normally disposed of with the other wastes as separation of such type of waste is not practically fully applicable (section 5). The main concerns with leachate infiltration of groundwater are the possibility of biological pollution or the introduction of human pathogens into the drinking water supply, and the potential for chemical pollution, mostly by organic pollutants and heavy metal traces.

Throughout the oPt, the dumping sites are unfenced which allow wind to blow deposited trash out of the site; posing sanitary concerns and detracting from the aesthetic quality of the landscape. Although some new projects have been recently launched recently; such as Zahrit El-Finjan sanitary landfill, these projects just include covering the wastes with a layer of soil, and lack the implementation of new technologies in this field. In this regard, it should be remarked that although landfills are constructed so as to minimize adverse effects on the environment, experience has shown that they are not fail-safe. Furthermore, the cost of land filling is rapidly increasing as land becomes scarce and refuse must be transported further and further from where it is generated. Hence, options for reuse and recovery have to be put on the table to resolve the growing mountain of waste. In this regard, sanitary landfills should be viewed as the ultimate means of disposal of all types of residual, residential, commercial and institutional waste as well as unutilized municipal solid waste from waste processing facilities and other types of inorganic waste and inert that cannot be reused or recycled in the foreseeable future. Ultimately, the Palestinian Agricultural Relief Committees (PARC) signed an agreement with Marj Bin Amer municipality to construct composting plant. The project comes within the framework of twinning between Jenin governorate and Modina Itali governorate through Nixsos Organization (Al-Quds, 2011).

For hazardous waste, it is worth noting that there is a real need for an appropriate mechanisms, organizational, and institutional framework to collect and handle this type of waste; as it is currently collected and disposed of along with the other types of waste, which make the whole waste stream hazardous and increase the danger of solid waste. Also, hazardous materials have to be listed and classified to improve the management of these wastes.

The dependence of the SW sector on external funds to cover running costs, coupled with the inability of local authorities to recover the management costs are the main constraints against the development of the services which threaten its sustainability. In this context, an adequate financial system needs to be applied to provide the needed financial data.

Generally, in the oPt municipal solid waste is not processed. Therefore, reuse and recycle or composting of organic fraction will significantly reduce the quantities sent to the sanitary landfill which result in the decrease of the gas emission and leachate generation in these disposal places. Still there is a gap between what resources are available to manage the SW and what is proposed or needed to perfectly develop this field through an integrated solid waste management system.

## 7. Israeli practices and solid waste management in the oPt

Under international humanitarian and human rights law, it is the responsibility of the Israeli authorities to ensure the well-being and safety of Palestinians. Principle 1 of the Rio Declaration of the UN Conference on Environment and Development employed language of human rights law, the second pillar of sustainable development states that, "*human beings are at the centre of concern for sustainable development*" and that they are, "*entitled to a healthy and productive life in harmony and nature*". Furthermore, the 1972 Stockholm Declaration on the Human Environment recognized the link between human rights and environmental protection stating that "[m] *has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being*". However, Israel has never recognized Palestinians' rights. There is no doubt that the Israeli activities, including disposal of hazardous waste and wastewater in the oPt, causes serious environmental problems and those, in turn, result in grave harm to human beings. Large amounts of dangerous materials and wastes are buried and thrown in the Palestinian agricultural land, which means that these wastes pollute the soil and groundwater that the Palestinian use. Additionally, solid wastes from settlements and industrial zones within these settlements are disposed of in the Palestinian land. More than 50 locations are used as dumping sites, which expose the Palestinian territory to the dangers of these wastes (PCBS, 2009).

According to the PCBS, approximately 565,000 Israeli settlers were illegally living in the oPt, and the total quantity of solid waste generated by them is around 250 thousand tons annually (PCBS, 2009). In fact, information about the real quantities and composition of these wastes is not clear as Palestinians have no access to such information. Evidence shows that much of the waste is being disposed of on Palestinian land and dumping sites. The solid waste generated in West Jerusalem, for example, is transferred to the Abu Dis dumping site. Additionally, wastes generated from industrial zones in these settlements are also disposed of in the Palestinian land. It is estimated that at least 200 factories are located within these industrial zones (PCBS, 2009). However, Aluminum, leather- tanning, textile-dyeing, batteries, fibreglass, plastics and other chemicals are among the major industries within these settlements. Wastes generated from these industries contain toxic elements, such as aluminum, chromium, lead, zinc and nickel. For example, the aluminum industry which is found in many Israeli settlements produces aluminum and acidic waste. Electroplating produces nickel, chrome and acidic waste. The battery industry produces lead in its wastewater. All of these inorganic substances are considered hazardous to health if accumulated in the human body.

Finally one must add to this the fact that nuclear waste from Dimona was dumped in the Palestinian Hebron area and also in the Gaza Strip east of the Al Bareij refugee camp and the town of Deir El Balah (Eyre, 2010).

## 8. Air Pollution:

Air pollution could be defined as the presence of any harmful gas, liquid, solid, radioactive or any other substance that directly or indirectly pollutes the air or space, and consequently damages the environment and affects public health and welfare.

Access to clean air is recognized as fundamental human right. This right is an important aspect of right to a healthy environment. Every person has the right to breathe clean air and governments are obliged to establish strategies to guarantee it.

This right has been both explicitly and implicitly recognized by the constitutions of nations in recent years:

- "Convention on Long-Range Trans-Boundary Air pollution" is a treaty on trans-boundary air pollution such as acid rain, which was concluded in 1979 and became effective in 1983. Most European countries and some other countries, such as the USA and Canada, became members, although Japan is not a member.
- "United Nations Framework Convention on Climate Change" (concluded in 1992, became effective in 1994) is a treaty in which an international framework concerning the issue of global warming was established.
- "Kyoto Protocol Treaty" was concluded in 1997 with the intent to enter into a legally binding treaty. The aim is to stabilize global gas concentrations in the atmosphere, and protect the present and future climate.
- "Stockholm Convention on Persistent Organic Pollutants" intends to impose regulations for global environmental pollution, such as a prohibition on the manufacturing, usage, and discharge reduction, etc. on harmful chemical pollutants persistently remaining in the environment as its objectives, and was concluded in 2001. Altogether 118 countries, including Japan and the EU, are members.

Furthermore, for example in French law, Article 1 of the Law on Air and the Rational Use of Energy adopted in December 1996 (Article 200-2, French Environmental Law code) recognized the "right of everyone to breathe air that is not harmful to the health" according to this Article: the government and its public institutions, local authorities and their public institutions as well as private individuals, all contribute, each within its field of competence and within the limits of its responsibility, to a policy the objective of which is the implementation of the recognized right of all to breathe air which is not harmful to the health. Furthermore, The Clean Air Act (CAA) of 1963 and its amendments, including the extensive Clean Air Act Amendments (CAAA) of 1990, aim to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." Some of EPA's top priorities are to improve air quality, take action on climate change, and clean up our communities. EPA's work on these priorities falls under the Clean Air Act and includes developing national programs, technical policies and regulations for controlling air pollution and radiation exposure.

**National Laws regarding air quality in the oPt:**

Chapter two "Air Environment" of Title II "Environmental Protection" of the Palestinian Environmental Law No. 7 of 1999 contains four articles regarding standards and regulations regarding air quality. These are:

**Article (19)**

1st. The Ministry, in cooperation with the specialized agencies, shall specify standards to regulate the percentage of pollutants in the air which may cause harm or damage to public health, social welfare and the environment;  
2nd. Each facility, which will be established in Palestine, shall abide to these standards; every existing facility shall make necessary changes in a manner that makes it conform to these standards within a period, which does not exceed three years.

**Article (20)**

Every facility owner shall provide all means to ensure the necessary protection for workers and the neighbors of the facility, in compliance with the conditions of occupational safety and health, against any leak or emission of pollutants in or out the working place.

**Article (21)**

It is forbidden to smoke in transportation means and closed public areas.

**Article (22)**

It shall be prohibited to utilize machines, engines or vehicles that generate exhaust that does not comply with the standards specified in accordance with the provisions of this law.

**Article (23)**

It is forbidden to deduct, treat or incinerate garbage and solid waste, that is only authorized in the sites designated for this purpose in compliance with the conditions determined by the ministry to ensure the protection of the environment.

**Article (24)**

The Ministry shall work on the reduction of ozone depletion in accordance with the provisions of international conventions to which Palestine is committed, by undertaking appropriate procedures regarding importing, producing or utilizing any chemical substances, which may cause harm thereto.

**Air Pollution in the oPt:**

The oPt suffers from substantial air pollution, especially in the urban areas and vicinities. In the oPt, transboundary air pollutants, industrial activities, population growth, and the increase in the number of vehicles are the key factors for deteriorating the air quality in the oPt. Transportation is one of the major contributors to air pollution in the oPt. The total number of licensed vehicles in the oPt is continuously increasing. In 2010 there was 182,466 licensed vehicle in the oPt (PCBS, 2011). The increased use of automobiles (especially the old ones) in the oPt emits tons of

hazardous gases, such as carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and hydrocarbons (HC). Also burning vegetation and the increased amounts of fossil fuels used as a source of energy, emit large amounts of carbon dioxide (CO<sub>2</sub>).

There are several industrial zones and industrial activities in the oPt. Certain industries emit, in huge quantities, smoke and hazardous and toxic gases. For example, some metal factories reuse the used motor oil as fuel, and the pottery industry use tires as a source of energy. In addition, Israel has constructed twenty industrial zones in the settlements in the West Bank; factories in the settlements emit various types of contaminants in the environment. It is difficult to obtain information about the settlement industrial activities in the West Bank. However, their products can be identified such as aluminum, leather, tanning, textile dyeing, batteries, fiberglass, plastic and other chemical industries (CJPME, 2005). Israel has moved many of its pollution industries from places inside Israel to areas inside the West Bank, such as the Dixon gas industrial factory which was located in Netanya and later was moved into an area near Tulkarm. Solid waste from this industry is burned freely, with no environmental controls. The burn of these waste results in the emission of dangerous black smoke and toxic gases, and the fumes of these toxic pollutants were moved by the winds into residential and public areas in Tulkarm causing respiratory problems and other health risks (CJPME, 2005). Plastic equipment, rubber and leather factories in Mishr Adumim settlement in Jerusalem Governorate is causing air and noise pollution (ARIJ UMD database, 2011)

However, data about the concentration of the air pollutants or their types are not available due to the lack of air quality monitoring stations in the oPt. Consequently, no description about the air quality could be provided. Nevertheless, ARIJ has published data and information about air pollution in Chapter Nine of the "Status of the Environment in the Occupied Palestinian Territory, 2007". These data were obtained from the two air quality monitoring stations that were installed by ARIJ. The first was installed in ARIJ building, north of Bethlehem and south of Jerusalem in August 2003 (currently it is not functioning and needs to be maintained or even replaced by a new station); and the second was installed in the American Arab University of Jenin (AAUJ) in November 2005. The data presented below are from ARIJ's 2007 report:

### **Sources of Air Pollitions:**

ARIJ did an emission inventory in the West Bank; the structure of the green house gas inventory, following the order established in the "Revised-1996 IPCC Guidelines-Greenhouse Gas Inventory Workbook, Volume 2". Based on the 1999-data obtained from both ARIJ and the PCBS, ARIJ calculated the following greenhouse gases: carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), nitrous oxide (N<sub>2</sub>O), Methane (CH<sub>4</sub>), sulfur dioxide (SO<sub>2</sub>), Ammonium (NH<sub>4</sub>), non-methane volatile organic compounds (NMVOC), particulate matter of 10 micrometers or less in diameter (PM<sub>10</sub>) (Table 7.5).

	CO <sub>2</sub>	CO	NO <sub>x</sub>	N <sub>2</sub> O	SO <sub>2</sub>	NH <sub>4</sub>	CH <sub>4</sub>	NMVO C	PM <sub>10</sub>
Economic sector	161,270	44	581	4	60	4		11	
Transportation	532,973	10,469	4,833	63	104	73		6991	
Electrical Generation	108,053	29	438	3	34	2		7	
Fuel Burning	348,742	2,017	1,244	10	226	85		138	
Agriculture	3,686	467	18	2,163			62		
Solid Waste	266,745		1,121		187	0	48,903		374

Source: Applied Research Institute-Jerusalem (ARIJ).

Figures (7.4 – 7.7) show some emissions in the West Bank. 38% of CO<sub>2</sub>, 80% of CO, 59% of NO<sub>x</sub> and 17% of SO<sub>2</sub> emissions were from the transportation sector. 24% of CO<sub>2</sub>, 16% of CO, 15% of NO<sub>x</sub> and 37% of SO<sub>2</sub> emissions were from fuel burning (industrial zones and heating in the winter). 19% of CO<sub>2</sub>, 13.5% of NO<sub>x</sub> and 30.5% of SO<sub>2</sub> were from solid waste burning.

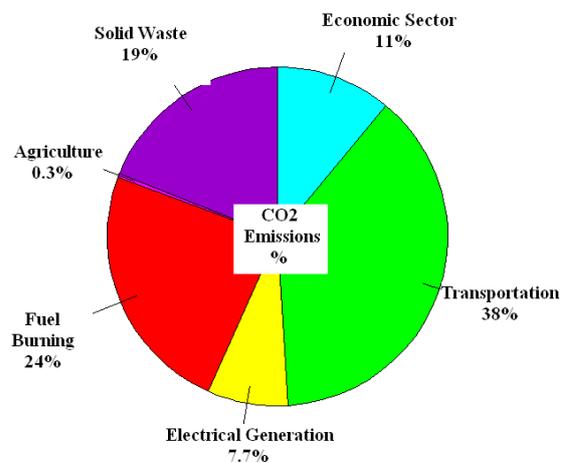


Figure 7.4: CO<sub>2</sub> Emissions (%)

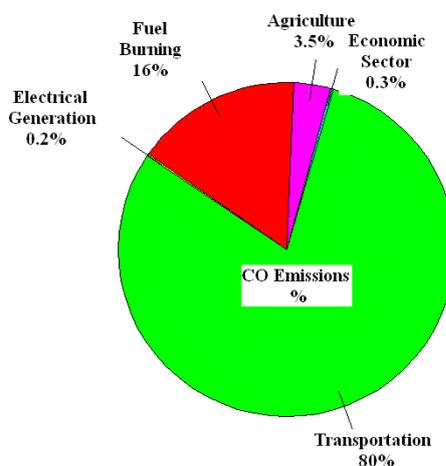
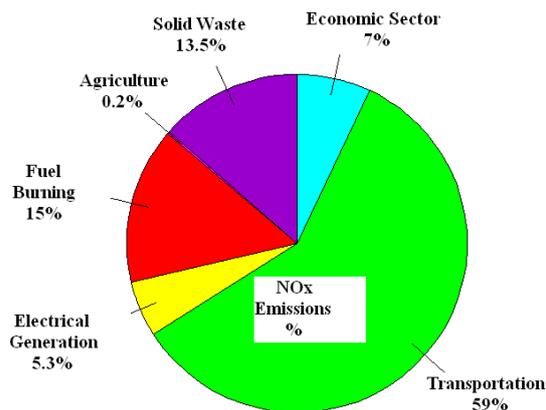
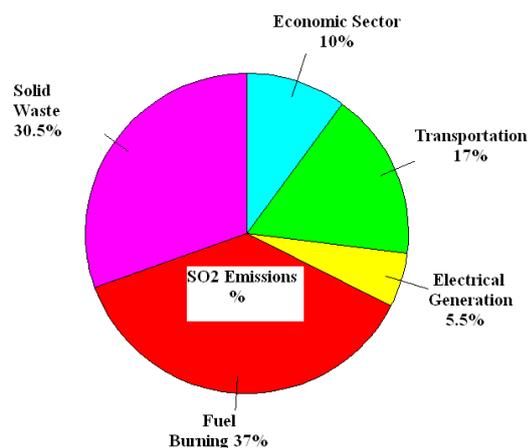


Figure 7.5: CO Emissions (%)

Figure 7.6: NO<sub>x</sub> Emissions (%)Figure 7.7: SO<sub>2</sub> Emissions (%)

### Analysis of Air Pollutant Concentrations at ARIJ Station:

Simultaneous measurements of photochemical air pollutants and meteorological parameters were carried out in the oPt, using air quality monitoring analyzers and a meteorological station. The analyzers measure carbon monoxide (CO), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), nitric oxide (NO), nitrous oxide (N<sub>2</sub>O) and nitrogen oxides (NO<sub>x</sub>). The meteorological station measures temperature, relative humidity, rainfall, wind direction, and wind speed.

The measurements were performed by ARIJ in Bethlehem, where the analyzers and the meteorological station are operating on a continuous basis (the location of the station is at the northern border of Bethlehem). Analysis of the observed concentrations of all measured pollutants had revealed the following:

- SO<sub>2</sub> concentrations vary between the hours of the day. Higher values were recorded around 8 am and 6 pm.
- Low averages of CO concentration vary from 0.4 to 1.3 ppm during the hours of the day in the year 2004. The highest averages were recorded around 8 am and 8 pm.
- By comparing the monthly CO average concentration, high averages were recorded in February and March, while the lowest average was recorded in July. Seasonal differences (high averages in the winter and low averages in the summer) were also observed.
- Low averages of O<sub>3</sub> concentration during the hours of the day in the year 2004 were recorded. The highest averages were recorded around 3 pm and lowest averages were recorded around 8 am and 9 pm.
- By comparing the monthly O<sub>3</sub> average concentration, a continuous increasing during the year was observed. The lowest average was recorded in January, while the highest averages were recorded in the last 3 months of the year 2004.
- Two high average concentrations of NO, NO<sub>2</sub> and NO<sub>x</sub> during the hours of the day in 2004 were recorded around 8 am and 8 pm. The low averages were

recorded around 4 am. Also, the concentrations of NO were very low to be approximately zero for the period of 11 pm - 5 am (Figure 7.8).

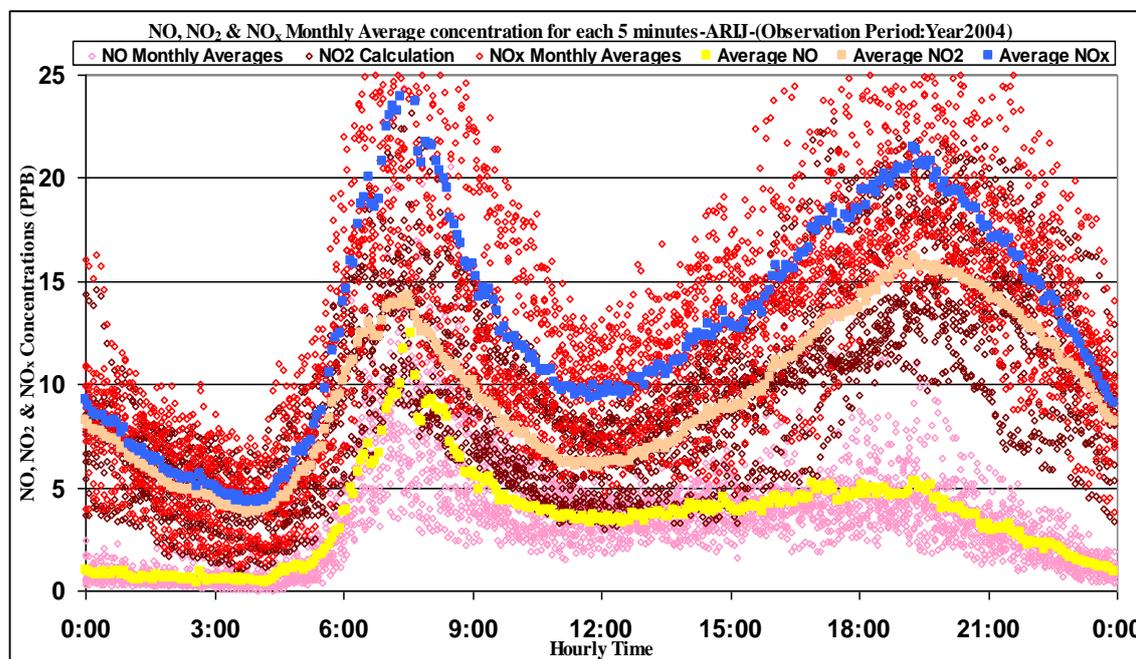


Figure 7. 8: NO, NO<sub>2</sub> and NO<sub>x</sub> monthly average concentrations in 2004 (ARIJ)

- g. By comparing the monthly NO and NO<sub>x</sub> average concentrations, a continuous increasing trend, except for November was noticed. The lowest average concentration was recorded in January, and the highest average concentrations were recorded in September and October. Also a difference between the NO<sub>x</sub> and NO average concentrations was clear, indicating that the source of pollution was far from the ARIJ station.
- h. According to the days of the week analysis (Figure 7.9), there were significant differences, Saturday and Friday were the lowest days of pollution, which might suggest that the source of pollution is from Israel, since the two days are the weekend in Israel, while the Friday and Sunday are the weekend in Bethlehem (Saturday is the busiest day in this city).

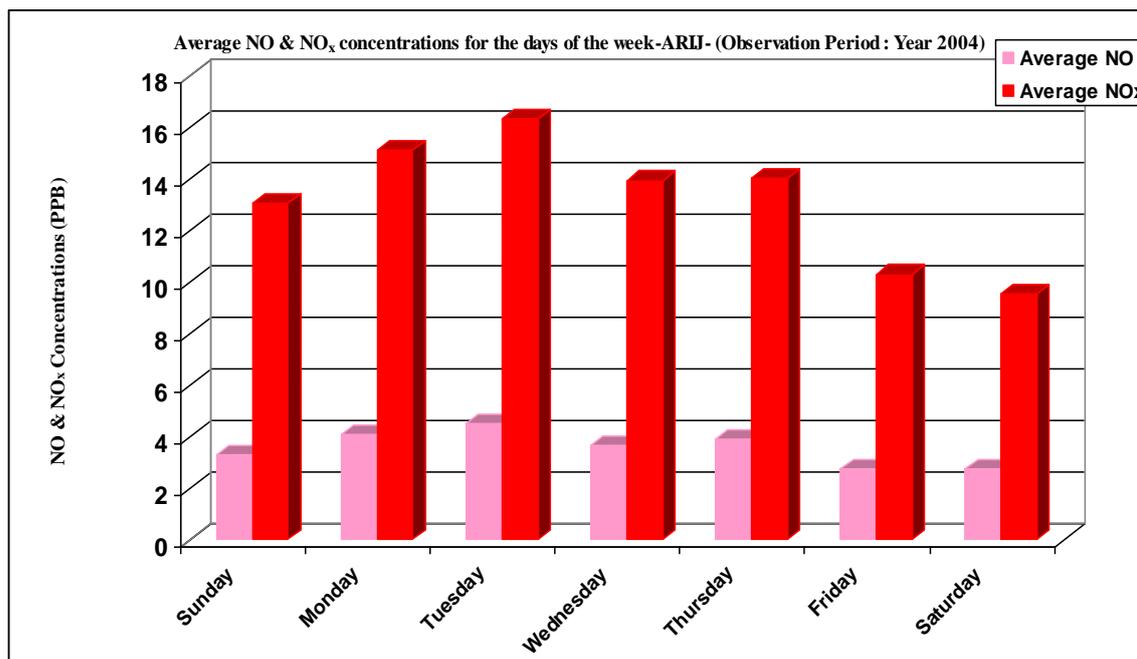


Figure 7.9: NO & NO<sub>x</sub> average concentrations during days of the week

- i. Figures 7.10 and 7.11 show that the highest concentrations of O<sub>3</sub> and NO<sub>x</sub> come from the west, due to the wind direction (WD).

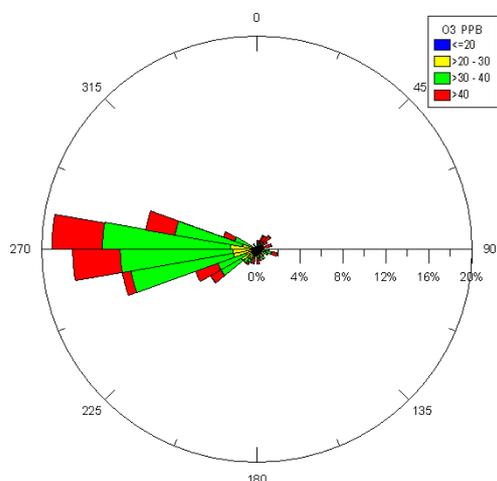


Figure 7.10: Daily average O<sub>3</sub> concentration in 2004, classified according to WD at ARIJ

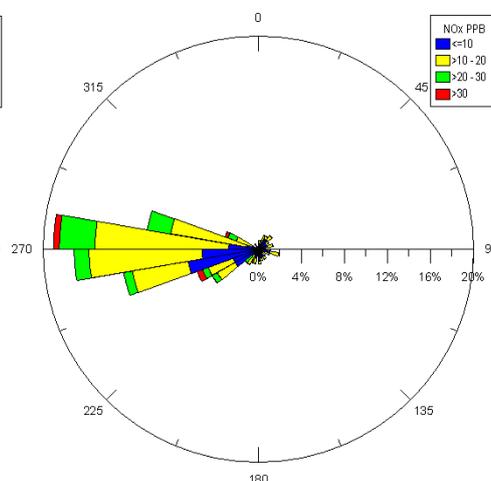


Figure 7.11 Daily average NO concentration in 2004, classified according to WD at ARIJ.

**Analysis of Air Pollutant Concentrations at AAUJ:**

The second air quality and meteorological station was installed at AAUJ. This station observes the pollutant concentrations and meteorological measurements in the Jenin region, north of the West Bank.

Pollutants' analysis for the AAUJ station for the month of January 2006 showed the following:

- a. The averages of SO<sub>2</sub> concentrations vary between zero and 18 ppb, and the average value is about 2 ppb. Higher values were observed in the day time more than in the night time.
- b. The averages of ozone concentrations differ according to the day hours, where higher by averages were recorded around 4 am.
- c. The averages of NO concentrations are approximately zero for the period of 6 pm - 9 am.
- d. The averages of NO<sub>x</sub> concentrations are higher than those of NO averages. The high averages were recorded from 9 am to 9 pm.
- e. The averages of CO concentrations are between 0.5 and 0.6 ppm with no differences during the hours of the day.
- f. Figure 7.12 shows the averages of NO, NO<sub>2</sub>, NO<sub>x</sub> and O<sub>3</sub> concentrations and the differences between them. These differences can be attributed to the source of pollution. The NO concentrations are near zero for the period of 6 pm - 9 am, indicating that the source of pollution was far from the station.

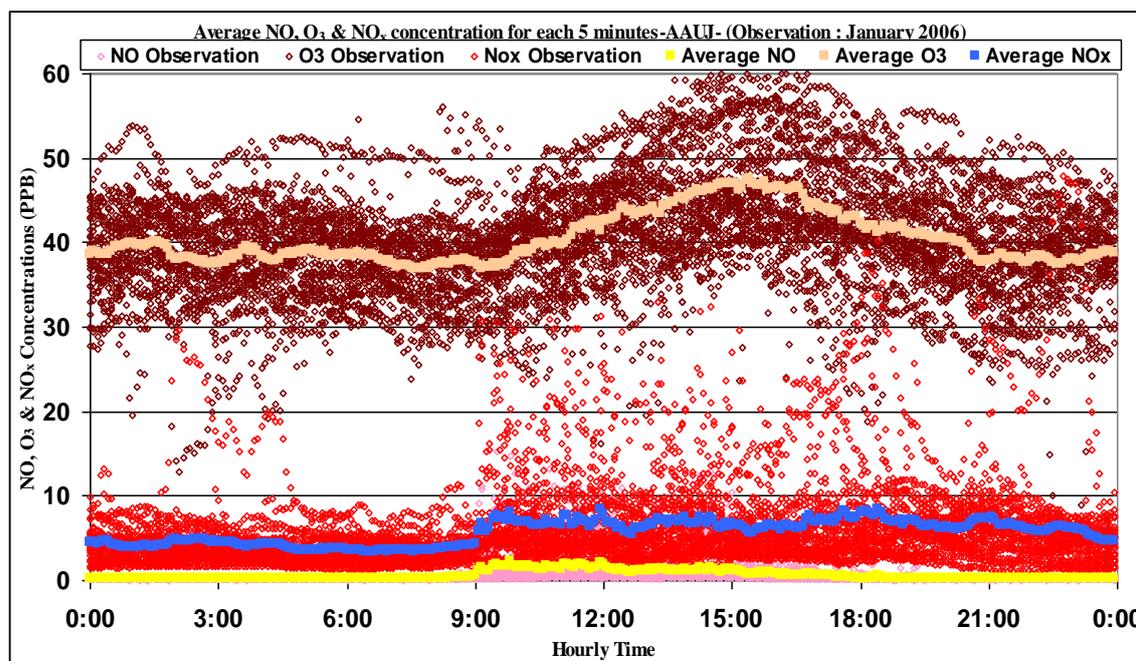


Figure 7.12: Averages of NO, NO<sub>2</sub>, NO<sub>x</sub>, and O<sub>3</sub> concentrations (AAUJ)

### Transboundary Air Pollution:

Air pollution is not limited by political, geographical or physical boundaries, therefore air emissions in Israel greatly impact the air quality of the oPt, especially since the westerly winds help in carrying pollutants from Israel towards the oPt. Thus, it is important to mention that Israel should take the responsibility of air pollution's problems in the oPt. The contributions to air pollution originated in Israel are very different from those originated in the oPt. This is due to the fact that Israel has larger industrial base and more automobiles than the oPt, which thereby increase the deterioration of air quality. The dense vehicular traffic in Israel is a major contributor to air pollution, emitting greater amounts of NO<sub>x</sub>, CO, CO<sub>2</sub>, Pb, and SO<sub>x</sub>, as well as

particulate matters, especially in the heavily populated urban centers and major cities, such as Tel Aviv. These Israeli pollutants end in the oPt due to the wind effect from west to east.

## Conclusions and Recommendations

Environmentally sound management of solid waste has not been totally employed in the oPt despite many efforts being directed toward improving this sector. Indeed, throughout the occupation period, this basic service was neglected by the Israelis, and this has resulted in deteriorating the environmental conditions within the oPt. Water quality, landscape, biodiversity, air quality, etc have been adversely impacted by improper waste management for a long time. Furthermore, the present political situation represents a main factor slowing improvements in the environmental field including sanitary disposal of solid wastes, in spite of having strategic and action plans in place.

Attempts have been made by the PNA to address this issue and there have been some improvements in some governorates, but the general situation remains far from satisfactory, and environmentally sound solid waste management still need more efforts and funds. The provided services are still limited and do not reach the expected level that human beings deserve or as is set out in human rights' laws. In fact, the service is limited in collecting and disposing the waste in uncontrolled dumpsites which are normally close to residence areas and lacking of proper health and safety requirements. To achieve a sustainable development, more central projects are needed along with an integrated plan to comprehensively improve the situation to be in accordance with the UNEP report in 1999 "Environmental standards in environmental management are an important tool which ensures the right to a clean and healthy environment for all people living on this earth".

Moreover, the hazardous wastes management in the oPt should be improved, it is suggested that two dumping sites especially designed for hazardous wastes should be constructed, one in the West Bank and the other in Gaza Strip.

Furthermore, general awareness levels regarding knowledge about environmental problems should be increased amongst civil society so as to guarantee adequate participation of the public, and this point forms a major and crucial point for the success of any future project. The public should be encouraged to participate in the process of solid waste management, this include the participation in relevant activities including; separation of domestic wastes at source, the implementation backyard composting, the utilization of compost for gardening

Through viewing the gambit of strategies that are available, a generalized hierarchy based on long-term liabilities or risk associated with waste management and the cost associated with each becomes apparent (Nicholas, 2003). Consequently, it is recommended to adapt a comprehensive waste management plan, which basically depends on the following points (hierarchy of waste management, Figure 7.13):

- Avoidance and reduction: this strategy prevents wastes from ever being formed in the first place.
- Recycling/resource recovery/waste-to-energy (R3 WE) recycling and reuse of materials, the recovery of certain wastes for reuse (known as resource recovery) and the conversion of certain types of waste into useful energy such as heat, electricity, and hot water are strategies which recover and offset costs for overall waste management.
- Treatment: when waste can't be prevented or minimized through reuse or recycling, then we need to pursue strategies aimed at reducing volume and/or toxicity. Treatment technologies are process that focus on stabilization of wastes, reducing toxicity, reducing volume before ultimate disposal, or in some cases creating limited-use-by-products.
- Disposal: the only other strategy available is disposal. Waste disposal practices are integrated into the environmental management strategies of all municipalities, are integral to all manufacturing operation, and quit often is the least desirable strategy and one that can be directly addressed by waste minimization and P2 (Pollution Prevention) practices.



**Figure 7.13: Hierarchy of solid waste management**

Regarding air pollution, there is a lack of official standards or maximum acceptable levels for air pollutants in the oPt. Although laws and regulations to protect the Palestinian environment have been established, they need to be enforced. Moreover, there is a need to formulate official national standards for air pollutants in the oPt. As have been stated earlier there is lack of air quality monitoring stations in the oPt, thus more stations should be installed and distributed at different locations in the oPt.

It is important to control air pollution in the oPt through adopting policies that minimize air emissions. These include using unleaded gasoline; using renewable energy sources such as solar energy projects in marginalized rural communities); adopting “best practices” to limit and control air emissions from quarries and stone cutting facilities; prohibiting open burning of solid waste; among other practices.

Since transport and the industrial activities form the major contributors to air pollution in the oPt, the following measures should be introduced to reduce its effect:

- Annual vehicle inspection should include air emissions
- Old vehicles, including buses, trucks, taxis and private cars, which are unable to meet the emission standards, should be taken out of service.
- Introduce and promote the utilization of environmental friendly cars such as hybrid cars and electric cars.
- Emission requirements should be established for motor vehicles.
- Regulate the dust emission from quarries, and take actions against dust producing facilities.
- The use of old tires or used motor oil, as a source of energy in bakeries and pottery industry or other type of industry, should be prohibited. This is due to the fact that huge amounts of green-house gases, such as CO and CO<sub>2</sub>, are emitted.

# CHAPTER Eight

## Climate Change

*Prepared By: Fadi Dwiek*

## Chapter Eight: Climate Change

### 1. Introduction

Climate change refers to long-term fluctuations in temperature, precipitation, wind, and other elements of the Earth's climate system (Beuland et al., 2008). It is recognized as a major issue of global concern with serious and long-term challenges that have the potential to affect every part of the globe; including the occupied Palestinian territory (oPt). Climate varies naturally on all timescales; as a result of changes climate elements; which is ranging from decades to millions of years. However, human influences, including industrial zones and activities and urbanization, along with Israeli destructive practices are thought to be bringing about a rapid change in the climate, due to massive emissions of greenhouse gases. This has both direct and indirect long-term climatic impacts on every region of the globe, causing alteration of oceanic and atmospheric currents that lead to shifts in precipitation patterns and changes in air temperature which will augment evapo-transpiration reducing infiltration and aquifers recharge (IPCC, 2007); The decrease of the annual average rate of precipitation in the Middle East and North Africa (MENA) region is expected to reach between 10 - 20% (IPCC, 2007).

According to the Intergovernmental Panel on Climate Change (IPCC) 2007, global warming is already altering the world's climate. Its impacts are felt in all sectors of society, through changes in temperature and precipitation as well as through changes in the frequency and intensity of climatic extreme events. In this context, the average global temperature is projected to rise by between 1.4°C to 5.8°C by the end of the 21st Century (IPCC, 2007). In the (MENA) regions, climate change will make the weather hotter and drier, and the annual average temperature will increase. According to the fifth report from the Working Group on Climate Change and Development, "*up in smoke- Asia and the Pacific*", in November 2007, the human drama of climate change will largely be played out in Asia, where over 60 per cent of the world's population (around 4 billion people), live (IPCC, 2007).

Efforts are underway around the world to further develop the scientific understanding of climate change and to develop solutions to it. The most prominent of these efforts are connected to the IPCC and the United Nation Framework Convention on Climate Change (UNFCCC). Based on these efforts, many parties that signed the UNFCCC have also ratified the Kyoto Protocol which pledges participating countries to take action to understand, track, and develop appropriate solutions. However, considerable uncertainty exists over projected climate changes at the regional scale, due to the weaknesses and limitations of the different types of global circulation models in assessing regional climate variations. Nevertheless, simple models of the climate system can be used and developed, in order to produce climate projections for a range of assumptions such as emissions of greenhouse gases. Long time-frame variations in climate are difficult to predict due to the nature of the climatic system, which means that small errors in predictions of climate variations quickly grow to become very large errors. Regardless of such limitations, there is still some skill in predicting future climate, which comes from the ability to predict slowly changing parts of the climate system, such as the relative humidity, drought, and desertification events per year (Bader et al., 2008).

## 2. Climate Change and Human Rights

The Fourth Assessment Report of the IPCC (2007) put it beyond doubt that the global climate system is warming and doing so mainly because of man-made greenhouse gas emissions. IPCC reports and other studies document how global warming will affect, and already is affecting, the basic elements of life for millions of people around the world.

It is obvious that projected climate change-related effects threaten the effective enjoyment of a range of human rights. For example, the right to safe and adequate water and food, the right to health and adequate housing. Equally, the human rights perspective brings into focus that climate change is set to hit the poorest countries and communities the hardest (MacInnis, 2008). The international human rights standards serve as a guide for measures to tackle climate change, underscoring the fundamental moral and legal obligations to protect and promote full enjoyment of the rights enshrined in the Universal Declaration of Human Rights, and in the core universal human rights treaties.

It is becoming apparent that climate change will have implications for the enjoyment of human rights. The United Nations (UN) Human Rights Council recognized this in its resolution 7/23 “*Human rights and climate change*” (28 March 2008), expressing concern that climate change “*poses an immediate and far-reaching threat to people and communities around the world*” and requesting the UN Office of the High Commissioner of Human Rights (OHCHR) to prepare a study on the relationship between climate change and human rights. In October 2008, the needed information of the study have been submitted to the OHCHR by the Member States, UN agencies, programmes and funds, regional intergovernmental organizations, national human rights institutions, and non-governmental organizations.

The Council adopted resolution 10/4 in March 2009, which states, “*Human rights and climate change*” and notes that “climate change-related impacts have a range of implications, both direct and indirect, for the effective enjoyment of human rights ...” It further recognizes that the effects of climate change, “will be felt most highly by those segments of the population who are already in a vulnerable situation ...”, recognizes that “effective international cooperation to enable the full, effective and sustained implementation of the United Nations Framework Convention on Climate Change (UNFCCC) is important in order to support national efforts for the realization of human rights implicated by climate change-related impacts”, and affirms that “*human rights obligations and commitments have the potential to inform and strengthen international and national policy-making in the area of climate change*”.

Over a decade ago, most countries joined an international treaty UNFCCC to begin to consider what can be done to reduce global warming and to cope with whatever temperature increases are inevitable. More recently, a number of nations approved an addition to the treaty: the Kyoto Protocol, which has more powerful (and legally binding) measures. The UNFCCC secretariat supports all institutions involved in the climate change process, particularly the Conferences of the Parties (COP), the subsidiary bodies and their Bureau.

In responding to climate change, governments have traditionally approached it as an ecological problem or more recently, as an economic one. To date the social and human rights implications of climate change have received little attention, (Aminzadeh, 2007). Yet the human costs of climate change directly threaten fundamental human rights; rights to life, to food, to a place to live and work, rights that governments have an obligation to protect. The UN Deputy High Commissioner for Human Rights has stated: “*Global warming and extreme weather conditions may have calamitous consequences for the human rights of millions of people...ultimately climate change may affect the very right to life of various individuals... [Countries] have an obligation to prevent and address some of the direst consequences that climate change may reap on human rights*”) (MacInnis, 2008)

Equity issues also arise in the climate change context because of its unequal impact on already vulnerable people and communities. As articulated by the United Kingdom’s Secretary of State for the Environment, ‘*socially, climate change raises profound questions of justice and equity: between generations, between the developing and developed worlds; between rich and poor within each country. The challenge is to find an equitable distribution of responsibilities and rights*’ (Miliband, 2006).

In an area where tensions over scarce resources are already high, the impacts of climate change could exacerbate existing political strife. So it is no surprise that Israel, the oPt, and Jordan are three areas that the international community has its eye on when discussing these security concerns. What is worrying if not surprising is the lack of action being taken to address climate change adaptation within this region, specifically within the oPt.

It is true that the obstacles in implementing climate change policy in the face of an extended occupation are numerous and overwhelming at best, but the threats of doing too little are large and serious enough for the Palestinian people, that more action must be taken. There is room enough for low-technology solutions such as the more widespread use of grey water for irrigation and the implementation of environmental outreach programs. Organizations like Community, Energy, and Technology in the Middle East (COMET) are already poised to help assist in the more widespread use of solar panels and wind turbines.

The Kyoto Protocol was adopted to help combat the adverse effects of climate change, or global warming. The UNFCCC, an international environmental treaty, states the goal of the Kyoto Protocol as the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UN, 1998).

## **International Environmental Law**

The Palestinian status under international law is a specific one, given that there is so far no recognition of Palestine as state. The oPt has been given observer status and some additional rights at the UN, but is neither a full member of the UN nor a party to multilateral environmental agreements thus far. As funding is frequently linked to party status under environmental agreements, this also makes it difficult for the PNA to receive funding for certain environmental projects. At the same time, the oPt and population are negatively affected by several environmental problems such as water scarcity and lack of sanitation. Moreover, global environmental phenomena such as climate change and the loss of biodiversity are environmental issues of relevance for Palestinians.

According to Article 2 of UNFCCC, states have a duty of prevention with regards to dangerous climate change, and they should act to achieve this in a way that allows ecosystems to adapt naturally to climate change, to ensure food production is not threatened and to enable sustainable economic development. Through its global scope, this duty of prevention, in principle, benefits oPt. Of course, the oPt is not a Party of the UNFCCC, though it has legal status within the UN governance system. Insofar as the oPt receives climate change damage, there is also the application of the customary rule of international environmental law that states do not cause harm to the environment of other states or areas beyond national control. States could be construed as fulfilling this harm prevention obligation to the Palestinian population, in regards to climate change, by their climate mitigation efforts (indirect damage prevention) and/or by directly assisting adaptation efforts within the oPt (direct damage prevention). There are conceptual uncertainties and practical difficulties over apportioning specific responsibilities of harm prevention to particular polluting states. However, the notion of ‘common but differentiated responsibility’, as employed in UNFCCC Article 3, directs attention instead to the special needs of those developing countries particularly vulnerable to the adverse effects of climate change. This Article could support the Palestinian National Authority (PNA), representing a territory with high climate vulnerability, in seeking access to climate change adaptation financing available under UNFCCC even though it is not a Party to the treaty.

### **3. Climate change adaptation planning in the oPt**

The concept of climate change has emerged in the most recent Palestinian Reform and Development Plan (PRDP), which outlines the government’s key budgetary priorities for the 2008-2010 timeframe. The Environmental Quality Authority (EQA) additionally generated a climate change risk and vulnerability assessment report/adaptation strategy for the oPt. The hope is that the general ideas presented in this report will translate into a concrete action plan for the oPt sometime in the near future, but nothing yet is on the horizon.

It is obvious that there is a broad consensus among the study processed by the UN Development Program of Assistance to the Palestinian People "(UNDP/PAPP)" ( i.e. Climate Change Adaptation Strategy for the Occupied Palestinian Territory) in 2009, and the aspirations of the Applied Research Institute – Jerusalem (ARIJ) in Climatic

change adaptations at the national level in the oPt, which includes the logical responses to their impact, focusing on climate events that have a large risk to a country. Regional climate change implications for the oPt over the next 50 years are expected to consist of; a decrease in annual average precipitation, an increasing incidence of drought, and increase in extreme climatic events. Limitations in the assessment of the future climate change risks in the oPt are expected, while adaptation is justified because the expenses of inaction may well be considerable. A number of key areas are negatively affecting human and economic development in the oPt such as water resources, agriculture and food security, public health, and tragedy risk reduction (UNDP/PAPP, 2009a).

On the other hand, civil society, private, and governmental sectors should be involved in the Climate Change Palestinian Adaptation Programme of Action by setting general plans and policies which can be addressed with a significant climate change impacts. The PNA is currently denied to work a political authority regarding the management of climate risk, due to the Israel occupation (UNDP/PAPP, 2009b).

It is important to note that, whilst any national strategy for climate adaptation should stress proactive actions to reduce the severity of climate change impacts, the uncertainties in forecasting climate risks mean that reactive responses will always also be necessary. Practical responses involve anticipation and planning in climate change risk management, while reactive responses are taken after climate change impacts have been realized (Adger et al., 2006). Few examples at the governmental level include national policies for strengthening food and water security, while reactive state responses include post-event infrastructure reconstruction and water rationing. These can usually only be considered in the context of particular events. However, the areas of highest risk can be anticipated and responsible national bodies can consider and prepare guidance on reactive response options (UNDP/PAPP, 2009c).

There are major governance challenges to climate change adaptation planning in the oPt. This is due to the weak capacities of national agencies and local authorities, lack of tools and systems to enable appropriate planning and implementation, and lack of information on technological adaptation and sustainable development options.

Climate change adaptation scheme for the oPt 2008-2009 reflects a national capacity-building, regarding climate change adaptation (UNDP Environment and Energy Group, 2008), involving:

- Enhancing capacity of developing countries to design and implement policies to integrate adaptation into domestic plans, budgetary and fiscal policies, investments and practices.
- Helping countries identify prioritize and implement short-term ‘no regrets’ adaptation responses (e.g. revised spatial and land-use plans, use of drought tolerant crops, enhanced emergency preparedness).
- Helping countries mobilize additional sources of funding for implementing adaptation responses.
- Developing a national Climate Change Adaptation Strategy.

This is consistent with UNDP/PAPP’s Mid-Term Strategic Framework 2008-2011; particularly its cross-cutting theme of environmental sustainability and its priority

focus on democratic governance (including strengthening the capacity of the PNA) (UNDP/PAPP, 2008). Furthermore, the Palestinian Adaptation Programme of Action was anticipated to deliver the following outcomes of capacity-building for the PNA:

- Identification of key climate change information and modeling needs for national development planning and environmental policy-making.
- Identification of priority climate change adaptation policy options and measures.
- Improvement in the capacity of PNA decision-makers effectively to take account of climate change impacts.
- Improvement in the capacity of PNA staff to monitor and evaluate policies with regard to climate change.

These objectives are consistent with the Palestinian Reform and Development Plan 2008-2010 (PRDP) (PNA, 2008), which includes enhanced quality of life and good governance as national policy goals. EQA, as the relevant line ministry in the oPt, has stated that an assessment of climate change impacts in the West Bank and the Gaza Strip is essential for national decision-making. However, climate change risks are most likely to impinge on PRDP goals to increase agricultural output and provide more efficient and equitable water delivery to households, they are also likely to affect a number of other PRDP goals, including social security protection and health quality improvement. There is thus a clear need for climate change adaptation planning.

Many options have been proposed for adaptation measures in the oPt. For example, the Palestinian Adaptation Programme of Action and the Climate Change Adaptation Strategy for the oPt has the principle aim of identifying and implementing the most appropriate way by which the PNA can build the capacity of the Palestinians to cope with current and future climate hazards. Water and agriculture sectors are argued to have justified the initial identification of adaptation options on account of their high sensitivity to climate change and their critical importance to public health and livelihoods in the oPt. Six major risks for the oPt were identified in this strategy, which are linked to the vulnerability pathways summarized below:

1. Crop area changes due to decreases in optimal farming conditions

**Main climatic causes of risk:** Changes in monthly precipitation distribution, increased temperatures in critical periods, and decreased groundwater recharge rates.

**Risks:** Loss of indigenous species, farming optimal conditions altered resulting in increased risk to rural income, soil deterioration due to land use changes, wheat-growing areas turning out to be for the cultivation of barley, and agricultural areas will be changed to pastures areas and then to a desert area.

2. Decreased crop and livestock productivity

**Main climatic causes of risk:** Changes in monthly precipitation distribution, increased temperatures in critical periods (heat stress), and decreased groundwater recharge rates

**Risks:** Crop productivity decrease and land abandonment.

3. Increased risk of water floods

**Main climatic causes of risk:** Increase of extreme events frequency and increased magnitude of extreme events.

**Risks:** Increased expenditure in emergency and remediation actions and Flash flood frequency and intensity increase

4. Increased risk of drought and water scarcity

**Main climatic causes of risk:** Decreased annual (and/or) seasonal precipitation, Decreased groundwater recharge rates, and increase in the frequency of extreme conditions (droughts and heat waves).

**Risks:** Conflicts among water impact due to drought and water scarcity and Water supply reduced

5. Increased irrigation requirements

**Main climatic causes of risk:** Decreased and more variable precipitation, Decreased groundwater recharge rates, Increase of drought and heat stress conditions frequency

**Risks:** Water availability decrease.

6. Increased risks to public health from reduced drinking water quality (including saline intrusion in the Gaza Strip)

**Main climatic causes of risk:** Decreased and more variable precipitation, decreased groundwater recharge rates, and saline intrusion from sea-level rise (Gaza Strip)

**Risks:** Drinking water quality decrease, groundwater contamination, and saline intrusion in the Gaza Strip (EQA, 2010).

These risks stand for integrated adaptation options for the agriculture and water sectors in the oPt. They are consistent with the emphasis in the Palestinian Reform Development Plan on the continuing strategic importance attached by the PA to the Palestinian agricultural sector (for economic development, food security and poverty reduction).

#### 4. Weather Events in the oPt

Extreme weather events, such as droughts which have noticeably increased in the oPt, particularly in the southern and eastern slopes of the West Bank. Eighty seven percent of the cultivated land is dedicated to rain fed agriculture and 33% of the entire landmass is used as pastureland for grazing (ARIJ, 2007). The total area of hyper arid, arid and climates comprises about 35% of the land area of the West Bank. Consequently, drought increases the vulnerability of rural people (rain-fed farmers and livestock herders) whose coping strategies are already exhausted due to the deterioration of economic situation, high food prices and the closure regime since the second Intifada (September 2000). Drought is expected to become more frequent, more intense and less predictable as a consequence of climate change (ARIJ, 2007). In rural areas that depend on rain-fed agricultural for an important part of their local food supply, changes in the amount and timing of rainfall within the season and an increase in weather variability are likely to aggravate the precariousness of local food systems. In addition to frost waves, heat waves and floods are sometimes catastrophic for human life and ecosystems (ARIJ & WFP, 2010; FAO, 2008). The oPt, along with its neighboring countries of the Mediterranean region, has experienced tumultuous rains and flooding; whereas such events were not frequent in the past. An increase in rain intensity, combined with a decrease in the overall precipitation, will certainly increase the surface runoff, and, thus, soil erosion and salinization income will also increase.

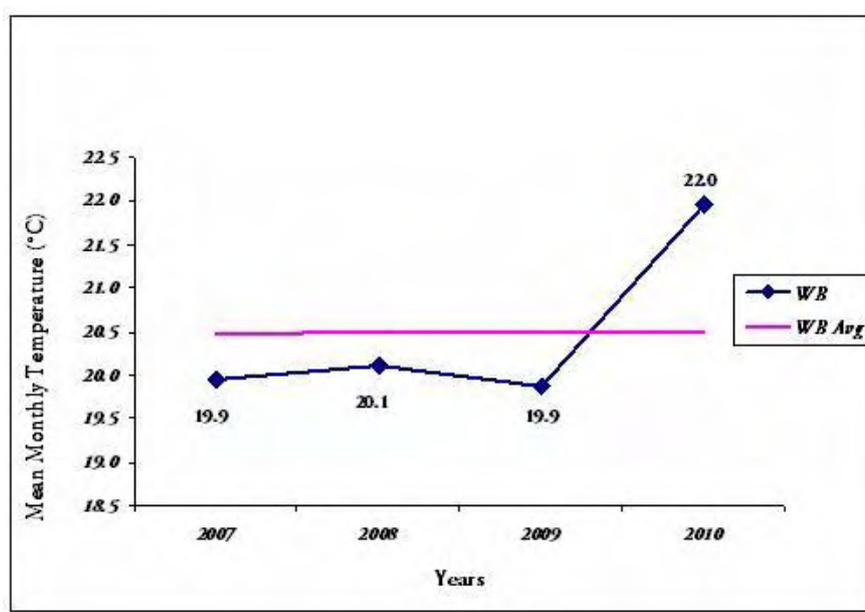
Moreover, the autumns of 1999 and 2010 across the oPt were worse than any year, which increased the drought to a critical value (ARIJ WERD, 2011).

The frequency of such extreme weather events is expected to increase with climate change, due to perturbation of ocean-atmospheric circulation patterns. Statistical analysis and predictions in such systems are complicated, due to the fact that, on the one hand, extreme events may appear as “outliers”, whose statistical properties do not seem to conform to the bulk of the data. On the other hand, they dominate the tails of the probability distributions and the scaling of high moments, leading to “multi-scaling” (ARIJ & WFP, 2010; FAO, 2008).

### i. Temperature

Price et al. (1999) observed an approximate 1°C/100 yr rise in annual mean temperature in Cyprus. Alpert et al. observed the same warming trend in Cyprus, as well as in Italy and Spain. A relatively moderate increase in air temperature was measured in cities of the Mediterranean basin, primarily in winter and less in the autumn and spring (Kutiel and Maheras, 1998; Maheras and Kutiel, 1999). Most of the increase, however, was measured in cities undergoing urbanization (Kutiel and Maheras, 1998). Temperature (which was measured by a thermometer exists in each meteorological station) changes in the oPt during the last 40 years showed warming mainly in the center and north (Ben-Gai et al., 1994, 1998a), with a cooling trend in the south. Thus, there appears to be a general warming trend related to anthropogenic factors

The increase in temperature during the 20th Century was obvious according to the Palestinian Central Bureau of Statistics. The increase was by no means uniform during the last decade, with the year 2010 being the warmest in the 125 years (PMD database, 2011) (Figure, 8.1). Generally speaking, heat waves have become longer and more intense



**Figure 8.1.: Annual Mean Monthly Temperature in the West Bank**

Source: PMD database 2011.

There has been a high increase in the annual mean monthly temperature in the West Bank across the previous four years; noted to be 19.9 °C in the year 2007 and 22.0 °C in the year 2010, which means a 2.1 °C difference increase (PMD database, 2011). Besides the increase in temperature, cooling trends should be mentioned, since Kutiel and Maheras, (1998) noticed that the cooling trend in the autumn of about -0.5°C/100yr was detected in most regions of the Mediterranean. In addition Nasrallah and Balling, (1996) found a slight but non-significant cooling trend in the Arabian Peninsula over the last 40 years. A cooling trend is also evident from measurements of sea surface temperature. In its Fourth Assessment Report, the IPCC predicts that, for the southern and eastern Mediterranean, warming over the 21st century will be larger than global annual mean warming – between 2.2-5.1°C.

It is noted there is no metrological information about Gaza, such as (temperature, rainfall intensity, etc) because of the damages caused by the Israeli occupation in 2007 to the metrological stations

## ii. Decreased Precipitation

In the vast semiarid regions such as the oPt, years of below-average precipitation (MoA, 2011) are more frequent compared to the years of normal or excess precipitation. The most significant environmental effects of climate change in the oPt, are a decrease in precipitation (with a significant seasonal variation) and significant warming. This decrease in precipitation was detected in the last decades primarily in the center and north of the Historic Palestine by several Israeli reporters and authors such as Steinberger and Gazit-Yaari (1996) and Ben-Gai (1998), which may be explained by a decrease in the frequency of mid-latitude cyclones in the East-Mediterranean according to Druyan and Rind in 1993 and Gačić in 1992. On the other hand, few authors assign the changes in precipitation primarily to intra-seasonal changes in rain distribution (Sharon, 1993).

Climate change forecasts for the eastern Mediterranean from high-resolution regional climate models give clear scientific backing to the IPCC projections for the region. Annual precipitation rates are deemed likely to fall in the eastern Mediterranean – decreasing 10% by 2020 and 20% by 2050 – with an increased risk of summer drought (ARIJ & WFP, 2010).

The oPt which is one of the natural areas in the western Mediterranean basin was vulnerable during recent years to low rainfall. The amount of rainfall in the West Bank for all the rainy seasons during 2007-2011 was between 354 mm and 500 mm (MoA database, 2011) compared to an average historical yearly rainfall of 532 mm (MoA, 2011). The impact of such climate change on Palestinian Agriculture is especially high owing to already existing water scarcity in the region and dependency of Palestinian agricultural on rainfall. The same climatic conditions are affecting the Gaza Strip governorates, where the amount of rainfall for the rainy seasons during 2007 – 2011 was between 228 mm and 316 mm (MoA, 2011). This amount is less than the historical average rainfall which is 358.5 mm (MoA, 2011).

It is still believed that the phenomena of climate change and global warming are two of the most important reasons that affect change on the region's rainfall. Variations in

the amount of rainfall from one year to another in both the West Bank and Gaza Strip during the past years are noted from Figure 8.2, showing that rainfall is increasing in one year and decreasing in another. During the period from 2007 to 2011, a significant decrease in the amount of rainfall in the West Bank and Gaza Strip has been noted in the rainy season 2007/2008. In the rainy season 2008/2010 the average amount of rainfall has increased in the West Bank and Gaza Strip, but still it was below the average. The rainy season 2009/2010 had registered the highest rainfall in the West Bank (500 mm), while in Gaza Strip it registered the lowest rainfall (228 mm). In the season 2010/2011 rainfall has decreased significantly in the West Bank, where the average was 395 mm which constitutes only about 74% of the average annual rainfall in the West Bank. In the Gaza Strip, the rainfall for the same season maintained almost the same level compared with the previous rainy season and was 236 mm, which constitutes about 66% of the average annual rainfall (MoA, 2011).

Figure 8.2 below shows the annual average rainfall for the West Bank and Gaza Strip for the rainy seasons 2001-2011.

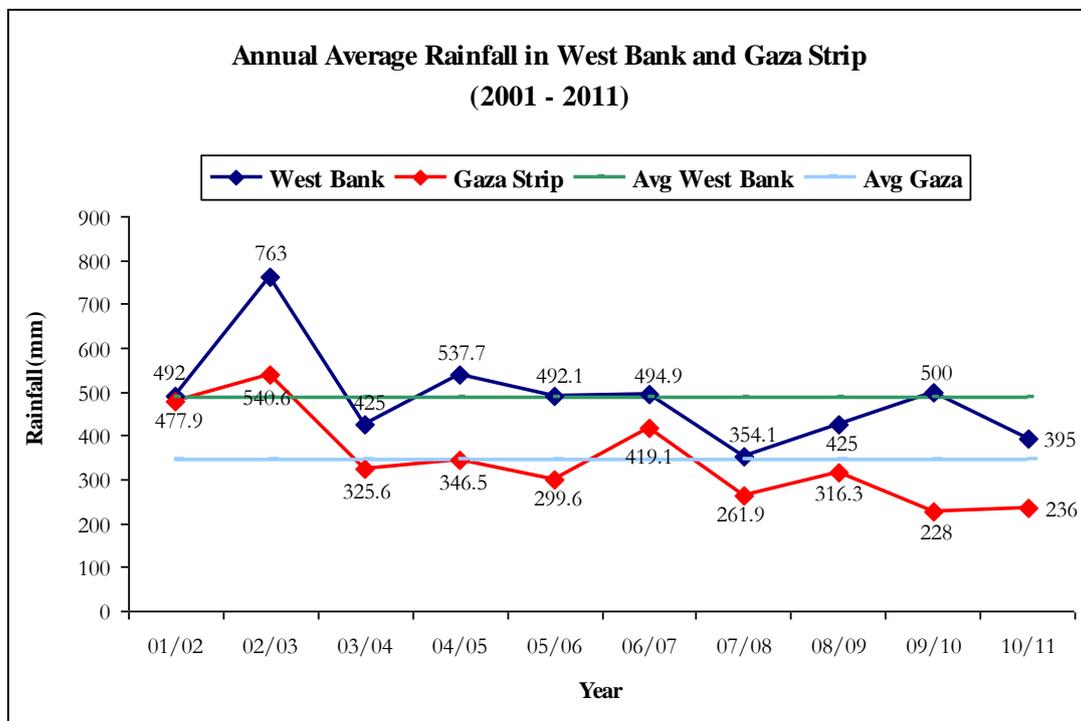
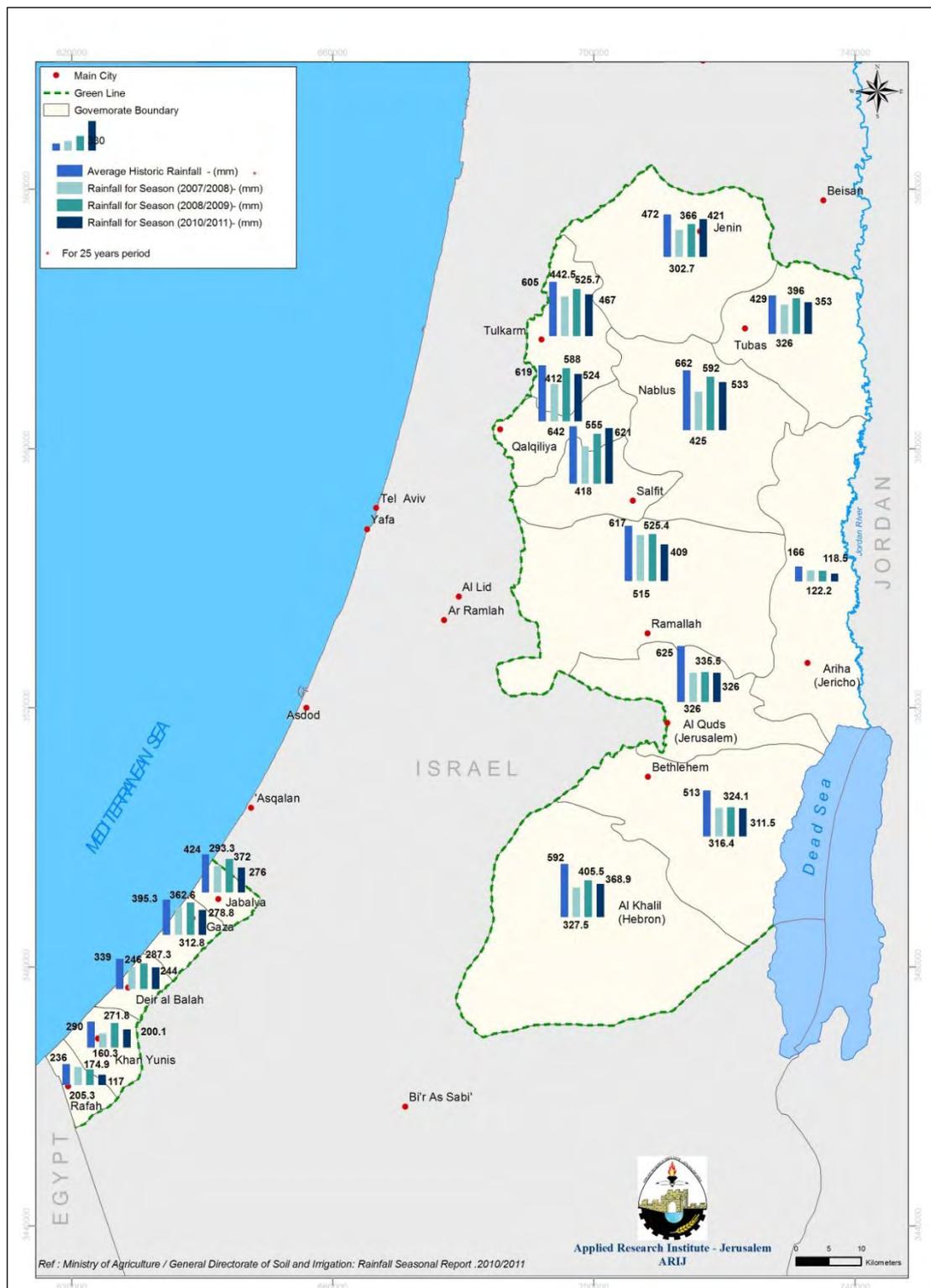


Figure 8.2: The average annual rainfall in West Bank and Gaza Strip (2001-2011)

Source: MoA, 2011

The Palestinian Water Scarcity Task Force (WSTF) has reported that, at the end of the rainy seasons (2009-2010 and 2010-2011), the rainfall registered 72 % of the historical average expected so far in the season in the West Bank; with regional variance in precipitation highlighting the concern with the continued shortfall in rainfall as the winter season comes to an end.

Map 8.1 shows the variations in the amount of rainfall from one governorate to another in the years 2007 – 2011.



Map 8.1: Average annual rainfall in West Bank and Gaza Strip (2007-2011)

Changes in the yearly distribution of rain in the historic Palestine from 1976 to 2000, found that the winter rainy season shortened over this period, particularly in the last decade (Kutiel, 2000). The delay in the rainfall resulted in nearly 60 percent drop in the volume of rain-fed crops planted during the September- November season compared to the 2010 season (Water Scarcity Task Force, 2011).

There is also a decrease in the number of rainy days, resulting in stormy rain which washes away the fertile soil and plants and reduces the storage capacity of groundwater basins. The number of rainy days in the rainy season 2009/2010 was 31 days, which accounted for 75% of the average annual rainy days (MoA, 2011). There has also been an unpredictable beginning of the rainy season and the fluctuation of a random distribution of rainy days, which negatively affects rain fed crops of field crops and trees; which constitute more than 90% of cultivated areas in the oPt (MoA, 2011).

During the rainy season 2010/2011, the rain began early in October, but then it stopped from November till the first third of December, which had a high negative impact on rain fed agriculture. After that the rain continued, and the rainy season lasted until the beginning of May; which had a positive impact on the tree horticulture and summer crops but a negative impact on the winter field crops. Add to that the successive heat waves that dried up the crops and trees due to lack of adequate soil moisture especially for rain-fed crops (MoA, 2011).

A prolonged drought could seriously affect crops and livestock in the oPt as it did in a number of neighboring countries such as Jordan and Syria. The drought condition in the oPt occurs as a result of the low amount and poor distribution of rainfall, which have drastically affected the growing season of crops and grazing plants during the last few years but mainly the last two years.

### **Weather forecast for 2011/2012**

In order to have awareness of, and be able to make all necessary policy and procedure planning in terms of reducing the impact of drought and the decline in rainfall, it is essential to develop an accurate national system for rainfall forecast and predictions. This may have alerted many countries, including Israel. The fact that the oPt has climatic conditions similar to those of Israel, we present here what was displayed on the site of the Israel Weather Forecast Local Service regarding the coming winter season (2011/2012) forecast:

It is expected that the amounts of rainfall in the next rainy season (2011/2012) will be within the average, whilst in January temperatures will be lower than average.

The monthly rainfall and temperature are expected to be as follows:

In November 2011, temperature will be lower than the average, as well as the rain (precipitation is expected to reach 80 mm in Jerusalem). December will be cool as usual with heavy amounts of rain (120 mm in Jerusalem). January 2012 will be colder than the average, and it is expected to snow at the end of the month on the highlands, and rainfall is expected to be less than the average (the amount of precipitation expected in Jerusalem is 75 mm). In February, the temperature will be 1 to 1.5 C° higher than the average and the month is expected to witness less than average rainfall (in Jerusalem, the amount of precipitation is expected to be 95 mm). During March, it is expected that temperatures will be higher and that rainfall will be lower than average (65 mm of precipitation in Jerusalem). In April, temperatures will be around

the annual average and rainfall but less than the average, while in May, the temperature will be 1.5 to 2 C° higher than the average and the month will be dry.

In conclusion, weather events that may appear unpredictable on relatively short-time horizons are actually a consistent part of a multi-scaling statistics on longer-time horizons.

## 5. Climate Change Impacts

The impacts of climate change are likely negatively to affect progress toward development in the oPt in a number of key areas including agriculture and food security, water resources, coastal zones, public health, climate-related disaster risk management and natural resources management. Climate change will thus constrain the ability of the PNA to reach poverty reduction and sustainable development objectives consistent with the UN Millennium Development Goals (MDGs) and other sustainable development indicators. While the following points summarize the major physical and socio-economic impacts of climate change on the oPt, one should bear in mind that spatial and temporal climate change complexities make their impacts on ecosystems and human communities in complex ways.

### *A- Water Resources:*

Interest in water resources in Mediterranean countries has risen significantly in recent years. This is largely due to the increased populations and their density within urban areas. Some parts of the world have already experienced a reduction in resource availability, whilst others have seen an increase (Tolba & Saab, 2008).

The demand for water in the oPt is dominated by three major user groups: agricultural irrigation, domestic use, and industry. Even if no climate change takes place at all, the population growth rate in the Opt is one of the highest worldwide; 3.18 %, whilst the world average is 1.17% (UN, 2010). A correspondingly rapid growth in agricultural and industrial output will be required to sustain this population which, in turn, will advance the water scarcity problem that is already severe in the oPt because of the Israeli restrictions on using all water resources, in addition to construct, enhance, or implement any existing water resources project.

The principal water resources available to Palestinians include groundwater, springs, and harvested rainwater (United Nations Environment Programme, 2003). There is little surface water and thus groundwater is the principal source of water in the West Bank. Surface water drains either westwards to the Mediterranean or eastwards to the Jordan River and Dead Sea. The lower Jordan River flows southwards at the eastern edge of the West Bank from Lake Tiberias to the Dead Sea (Abdul-Jaber et al., 1999).

The aquifer systems rely on recharge from rainfall to a great deal of extent. In the last five years, rainfall dropped significantly by 20 to 30 %. As a result, a drastic drop in the water table elevation was noticed in many wells across the West Bank. It was noticed that around 5 to 10 m drop in the water table elevation in these wells was due to recent drought and the Israeli measurements which also restrict the use of water resources and limit the amount of water distribution. The average recharge volume

from rainfall had also dropped by 10, to 20 % (Froukh, 2003). The effects of climate change on groundwater may include:

- A long-term decline in groundwater storage
- Increased frequency and severity of groundwater droughts
- Mobilization of pollutants due to seasonally high water tables
- Saline intrusion in coastal aquifers, due to sea level rise and resource reduction

### ***B- Agricultural Production:***

In the oPt, many agricultural ventures, such as fruit production is a significant commercial and, to a large extent, a primary source of revenue for agricultural areas (FAO, 2008). This however is extremely vulnerable to damage from temperature extremes; particularly minimum temperature extremes. Rural areas depend on rain-fed agriculture and it forms an important part of their local food supply. Thereby changes in the amount and timing of rainfall within the season and an increase in weather variability are likely to aggravate the precariousness of local food systems. The following are some expected climate change (directly or indirectly related) impacts on agriculture:

- Increase of temperature and frequency of extreme events will reduce crop yield (some crops are more tolerant than others).
- Modification of mean temperature will induce changes of the agricultural distribution of crops.
- Increase of temperature will negatively affect marginal land and its farmers.
- Scarcity of water resources will force farmers to abandon marginal land, and will increase desertification.
- Socio-economic impacts associated with loss of agricultural and other related jobs, resulting in the increase of unemployment, loss of income, and political disorder.

Moreover, drought is equally affecting the farmers, who cannot irrigate their crops, and t herders who can no longer rely on pastures for grazing. Pastoralists are unable to pay for extra water for their animals to drink in the summer. The combined effect of rising fodder and water prices are leading to a situation wherein sheep are becoming a liability, rather than an asset, as herders are trapped in a cycle of debt with water truckers and fodder traders.

### ***C- Biodiversity Losses:***

Global warming in the last century was fast enough that the resultant shifts in species ranges may lead to extensive biodiversity losses. The oPt's biodiversity is considered as one of the 25 recently-defined as “global biodiversity hot spots” (Myers et.al., 2000). The oPt’s biodiversity is predominantly rich, as it is positioned at a crossroad between African, Asian and Mediterranean bio-geographic regions, each contributing to its different species. The speed and magnitude of climate change may elicit different responses at different levels of ecological organization, namely the population, the species, and the community, as well as the whole ecosystem level (See chapter four).

There are in addition grave risks of overgrazing and degradation of the oPt's ecosystem, as the number of livestock exceeds the land carrying capacity, as well as due to the restricted movement and access to grazing areas and pastures (land-use land-cover classification). The Jordan Valley and the Eastern slopes show the highest severity of land degradation. The main reason for the degradation is steep slopes, saline soils, water over pumping, overgrazing, and poor farming techniques (ARIJ & WFP, 2010).

#### ***D- Human Health:***

Climate change is expected to have critical impacts on human health in the Middle East, in general, and in the oPt in particular. This is not because of the change itself but also due to the lack of indispensable advanced medical care. Climate change will have both direct and indirect impacts on Palestinian society.

People who suffer from pollen and dust allergies will suffer more by any abrupt change in climate as the allergy season will start earlier, last longer and become more intense. In the past, the allergy season was starting in May but now it is starting in March. As a result, an increase in respiratory diseases is expected among children, elderly, and people with chronic diseases. In addition the very young, very old, and very weak are likely to be affected by heat waves and, thus, mortality rates may increase in these groups.

Indirect impacts may appear in the term of diseases that occur from contact with insects and other living organisms. In the case of climate change, attention should be focused on diseases caused by insects, because insects have a shorter life span than other developed organisms. So, the life cycle of these insects will be affected by climate change. Many diseases may spread in the oPt, but the cause of greatest concern is the possible spread of malaria.

#### ***E- Sea Level Rise:***

The Gaza Strip is located along 40 km of the southern coast of the Mediterranean Sea, and is expected to rise as a result of global warming. This rise will increase erosion along the Gaza Strip beaches. Also, some low lying coastal structures in the Gaza Strip would be affected by this rise. They could be lost and damaged through flooding or erosion, causing a huge loss in valuable lands and buildings and, in turn, forcing the inhabitants of these areas to immigrate. The Gaza Strip is a mere 11 km in width and will be seriously affected if severe flooding occurs.

## 6. Destructive Israeli factors affecting climate change in the oPt

Natural Palestinian ecosystems are a casualty of the Israeli Occupation, due to the systematic uprooting of both natural and planted trees, to the demolition of fertile agricultural land, and to the destruction of groundwater aquifers.

There are almost 93 major forests in the West Bank and 13 in the Gaza Strip, approximately covering 230 km<sup>2</sup> and 2 km<sup>2</sup>, respectively. Forests cover approximately 4% of the total area of the West Bank and 0.5% of the Gaza Strip (ARIJ, 2007). It is well-known that forests alter the environment by moderating climate, improving air quality, conserving water, and harboring wildlife. Climate control is obtained by moderating the effects of sun, wind, and rain. Radiant energy from the sun is absorbed or deflected by leaves on deciduous trees in the summer and is filtered by their branches in winter.

The construction of the Segregation Wall, upon completion, will intensify these problems. Tens of thousands of trees were uprooted in the West Bank. In addition, the Wall itself will act as a physical barrier to the terrestrial ecosystem disrupting wildlife corridors and, hence, wildlife mobility. Around 1.5 million trees have been uprooted by the Israeli Occupation Forces between 2000 and 2011 in the West Bank and Gaza Strip (ARIJ UMD database, 2011) (Table 8.1). This will have a destructive effect on the oPt's climate, by disrupting the natural carbon sequestration process, in which carbon dioxide (CO<sub>2</sub>) from the atmosphere is absorbed by trees, plants and crops through photosynthesis, and is stored as carbon in biomass (tree trunks, branches, foliage and roots) and soils. Trees that sequester carbon, when subjected to anthropogenic disturbances, can suddenly or gradually release the carbon back to the atmosphere. Practices that increase carbon losses and decrease sequestration generally devastate the quality of soil, water, air, wildlife habitat, and the ecosystem in general.

**Table 8.1 Uprooted trees by Israeli occupation in the West Bank**

Year	Uprooted Trees
2000	19,003
2001	55,698
2002	16,058
2003	150,594
2004	42,384
2005	90,104
2006	20,900
2007	31,785
2008	8,638
2009	8,745
2010	10,364
August 2011	10,410
<b>Total</b>	<b>464,683</b>

Source: ARIJ UMD database, 2011

## 7. Industry and Human activities

The increased population, and the expanded human and industrial activities (especially in the lack of regulations and as a result of 40 years of the ongoing military Occupation) in the oPt have increased the amount of smoke and hazardous gases, which contain greenhouse gases emitted into the air. Transportation is one of the major contributors to air pollution. The total number of licensed vehicles is continuously increasing, in the West Bank; the total was 77,584 in the year 2007 (PCBS, 2008), and it increased to 121,565 in 2010. The total number of licensed vehicles in the oPt in 2010 was 182,466 (PCBS, 2011). The increased use of automobiles (especially the older ones) in the oPt emits tons and tons of hazardous gases, such as carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and hydrocarbons (HC). Also burning vegetation and the increased amounts of fossil fuels used as a source of energy, emit large amounts of carbon dioxide (CO<sub>2</sub>).

There are many industrial zones and industrial activities in the oPt. Certain industries emit, in huge quantities, smoke and hazardous and toxic gases, which has increased the level of greenhouse gases in the atmosphere. For example, some metal factories reuse the used motor oil as fuel, and the pottery industry use tires as a source of energy. In both cases, large quantities of toxic gases including CO, CO<sub>2</sub>, and NO<sub>x</sub> are produced and emitted into the air. Also, the charcoal industry produces large amounts of CO, and CO<sub>2</sub>. Moreover, ozone (O<sub>3</sub>), which is a powerful greenhouse gas, is also produced from the photochemical reaction of the nitrogen and carbon molecules, present in the atmosphere.

In addition, the Israeli industrial zones make the situation worse; there being up to illegal 200 industrial factories located within the West Bank. These factories are either located in the industrial zones or inside the settlements themselves. Information about the settlement industrial activities in the West Bank is difficult to achieve. However, their products can be identified such as aluminum, leather, tanning, textile dyeing, batteries, fiberglass, plastic and other chemical industries (CJPME, 2005). Israel has moved many of its pollution industries from places inside Israel to areas inside the West Bank, such as the pesticide factory in Fafr Saba which produces dangerous pollutants that was moved to an area near Tulkarm. The wastewater from this factory has damaged the local citrus trees and pollutes the soil in the area, in addition to the likely problem of tainted groundwater. An additional example is the Dixon gas industrial factory which was located in Netanya was moved into the same area near Tulkarm. Solid waste from this industry is burned freely, with no environmental controls. The burn of these waste results in the emission of dangerous black smoke and toxic gases, and the fumes of these toxic pollutants were moved by the winds into residential and public areas in Tulkarm causing respiratory problems and other health risks (CJPME, 2005). Plastic equipment, rubber and leather factories in Mishr Adumim settlement in Jerusalem Governorate is causing air and noise pollution, in addition to the use of toxic substances in the production process (ARIJ UMD database, 2011)

## 8. Weaknesses and Limitations

There are a few serious weaknesses and limitations in dealing with climate change issues and factors affecting our area which can be summarized as follows:

1. Limited legal frameworks for disaster risk reduction, which are response-led rather than preventative.
2. Underdevelopment of policies for disaster preparedness, mitigation, and emergency response.
3. Weak capacity in disaster management and rescue operations.
4. Lack of capacity and training in disaster risk management and policy implementation at government level (national and local).
5. Lack of coordination between central and the local level authorities in disaster management activities.
6. Limitations in using high technologies and devices used to monitor climate change issues.
7. Scattered data (if exists) in different institutes and government and not easy to get it.
8. Media coverage of climate change – both mitigation and adaptation.
9. Low level of awareness of aspects of the environment, especially those related to climate change.
10. Weakness or lack of studies on climate change.
11. Limited local expertise.
12. The belief that the problem of climate change is of global character and is not processed locally.

## Conclusions and Recommendations

The most significant environmental effects of climate change for the population of oPt, over the course of this century, are projected to be a decrease in precipitation (with significant seasonal variation) and significant warming. Climate change forecasts for the eastern Mediterranean from high-resolution regional climate models give clear scientific backing to the IPCC projections for the region.

Temperature increases, increasing CO<sub>2</sub> levels, and altered patterns of precipitation are already affecting the oPt water resources, agriculture, land resources, and biodiversity; and Climate change will continue to have significant effects on these resources over the next few decades and maybe beyond. Climate change impacts on ecosystems will affect the services these ecosystems provide, such as cleaning water and removing carbon from the atmosphere, In addition Israeli practices such as Uprooting of trees and forests for settlement expansion, environmental and air pollution resulting from drilling and blasting operations used in roads and settlements construction and other practices, leading to the elimination of wildlife which affect on the climate and expand desertification; but we do not yet possess sufficient understanding to project the timing, magnitude, and consequences of many of these effects.

There is a need for new legislation as well the effective application of existing water laws, development of an Environmental Information System (EIS) for better future planning, development of regional climate change adaptation programmes, in addition to the Climate Change Adaptation Strategy which was developed by Mason and others (2009) adopts the concept of climate vulnerability, defined as combined biophysical vulnerability and social vulnerability. Input from stakeholders in the West Bank and Gaza shows that water and agricultural sectors in Palestine are most sensitive to climate hazards, both current and future. It is also essential to review previous work in all sectors (Specially the water sector) to make sure that the climate change adaptation effort is not a duplication of other previous work.

Certain measures may be taken early to ameliorate the probable effects of climate change in the oPt. The most severe impacts of climatic change are likely to be in terms of desertification, water resources' scarcity and degradation, and the subsequent impacts of these two phenomena on the agricultural industry and, hence, on food security of the oPt's population.

It is well known that desertification (along with urbanization) could have contributed to a small fraction of the overall warming. So, the following are some options considered necessary for combating desertification:

- Forestation in regions of over 100 mm annual rainfall. This will reduce soil erosion and will enhance precipitation at a (meso) scale level.
- Enhancement of soil moisture and decreasing leakage of water and nutrients.
- Increasing plant productivity and diversity.

One of the essential steps to reduce the adverse impact on water resources' supply in the oPt, is to take appropriate alleviating actions, by introducing more careful and integrated water management, especially for the agriculture sector and increase water efficiency and conservation in addition to creating non-conventional resources. Moreover, the most vulnerable areas in the oPt must be specified, in order to introduce an effective disaster preparedness strategy.

Agricultural production in the oPt can be fragile and the Palestinian farmers may have to rely on off farm income to manage any future risk. As a result, farmers may move to other more economically secure options. Adaptation and coping with challenges can be achieved by considering the uncertain environment facing most Palestinian producers, which require:

- Predictable governmental programs and reliable resources of weather events' data.
- Publicly funded research programs for reliable and unbiased findings, acceptable by the public.
- Technological advances in irrigation systems and, to a certain extent, genetic modification of plants that tolerate extreme events.
- Development of polices to reduce the risks of disasters.
- Viable support systems for high-risk production (e.g., strawberries).

## **CHAPTER Nine**

# **Sustainability within the Palestinian Context**

*Prepared By: Dr. Jad Issac, Jane Hilal, Abeer Khair, Roubina Bassous Ghattas  
and Dr. Tahseen Saya'ra*

## Chapter Nine: Sustainability within the Palestinian Context

### 1. Sustainable Development from a Human Rights' Perspective

The relationship between development and human rights, both in terms of concept and practice, has a long history. Human rights and sustainable development are interdependent, inextricably linked, and mutually reinforcing. People are at the center of sustainable development, and as such, "The logic of human rights in development is inescapable" (Robinson, 2000). The development of a society requires the meeting of the basic needs of each individual. The right to development declares that all people should be treated equally in the access to the resources and the means of sustainable development.

The link between sustainable development and human rights has developed over the years. The first time for the right to development to be recognized as an individual and collective right was in 1981, in Article 22 of the African Charter on Human and Peoples' Rights "All peoples shall have the right to their economic, social and cultural development with due regard to their freedom and identity and in the equal enjoyment of the common heritage of mankind".

Later, the right to development was proclaimed by the United Nations (UN) General Assembly in its resolution No. 41/128, the Declaration on the Right to Development of 1986, which was adopted. Article 1.1: "The right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized". Article 1.2: "The human right to development also implies the full realization of the right of peoples to self-determination, which includes, subject to the relevant provisions of both International Covenants on Human Rights, the exercise of their inalienable right to full sovereignty over all their natural wealth and resources".

The UN Conference on Environment and Development (Rio Declaration) that took place in 1992 recognized the right to development as one of its 27 principles. Principle 3 of the Declaration states, "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations". Since then the importance of applying a human rights' based approach to meet the objectives of sustainable development has been better understood. The right to development was afterward recognized in the Arab Charter on Human Rights and reaffirmed in several international instruments including, the Vienna Declaration and Programme of Action of 1993, the Copenhagen Declaration on Social Development and Programme of Action of 1995, the Millennium Declaration, the Monterrey Consensus of 2002, and the World Summit Outcome Document of 2005. The Declaration on the Rights of Indigenous Peoples of 2007 recognized the right to development as an indigenous peoples' right, as they have the right to define their own development priorities.

## 2. Palestinian Legal Status

Palestine's legal status is complicated since most of the laws have been inherited from different successive occupations. Following the launching of the Middle East peace process in 1991 and the Oslo agreement between the Palestinian Liberation Organization (PLO) and the state of Israel, the first free elections ever for the Head of the Palestinian National Authority (PNA) and the Palestinian Legislative Council took place on Palestinian soil in 1995. Since then, the PNA has been building its capacity to run the affairs of around three million Palestinians in the West Bank and Gaza under adverse political conditions. The PLO as a national liberation movement has been transformed into an almost fully-fledged government. But this transformation has not been easy, as has been the case of other liberation movements following occupation. The PNA still does not have full sovereignty over the West Bank and Gaza Strip, or control over border crossings. The PNA inherited a poor infrastructure in the West Bank and Gaza Strip after 44 years of Israeli occupation, which has necessitated a huge investment program and the development of an efficient public administration.

The inherited legal system in the oPt is a mix of Ottoman, British, Jordanian and Egyptian laws and a plethora of Israeli military orders that were issued to serve the interests of the occupation. Most of occupation powers have set legislations without real enforcement of law in preference to the environment. Even with the set of agreements that were held between Israel and Palestine to help the cooperation in implementing principles and standards concerning the protection of environment and the utilization of the natural resources on a sustainable basis, the Israeli government has persisted in its occupation practices which do not serve a sustainable environmental cause. . This is compounded by the expansion of illegal Israeli settlements, land confiscations, and the contribution of a series of by-pass roads to be used by Israelis for the sole purpose of linking their settlements and avoiding contact with Palestinians. In addition, the closure of grazing areas, the military bases, and the segregation wall that has been established have all caused changes in the topography, natural stream flow routing, increased soil erosion and biological imbalance of the area.

During the Israeli occupation, several laws have been issued for the protection of natural resources. However, those implemented in the West Bank and Gaza Strip gave Israel the full control over Palestinian natural resources (mainly land) for security reasons. The outcome of Israeli laws passed for the West Bank can be seen from the huge area of land that has been confiscated or under Israeli control; currently reaching up to 61% of the total West Bank area (ARIJ-UMD, 2011). The practices of the Israeli Occupation and control used by the Israeli Authorities have systematically hindered the development of the Palestinians, helped to increase poverty among them, damaged the environment in the process and resulted in major physical impediments towards accomplishing sustainable development in the oPt. Environmental problems, such as land degradation, deterioration of biodiversity, depletion of water resources, deterioration of water quality, air pollution, etc. have dramatically accelerated during the Israeli Military Occupation since 1967. All the facts indicate that the Palestinian environmental rights have been badly violated by the Israeli Occupiers especially during the so-called "peace process".

This regulatory environment, including the legal and administrative framework, licenses, taxes, along with the ad hoc enforcement were not conducive to the development of a sustainable Palestine. The legal framework required substantial adjustment to enable the different vital sectors to achieve its potential. Accordingly, in order to determine means and procedures for legislation the PNA issued a law regarding the measures and regulations of law preparation.

Several new policies and laws were developed and adopted by the PNA such as , ‘The Environmental Quality Authority issued the Environmental Law’ in 1999, and finalized in 2003, the Palestinian Environmental Strategy in 1999, National environmental action Plan in 2000, and the National Biodiversity Strategy and Action Plan, 1999. The Ministry of Agriculture also finalized Agricultural law, 2003, including forestry and rangeland sectors and the Palestinian Agro-biodiversity strategy, 2005. Moreover, several policies and laws were developed and adopted by the PNA, such as the Palestinian Local Government Law (1997), Industrial Estates and Free Industrial Zones Law (1998), Natural Resources Law (1999), and Water Law (2002), Palestinian Development Plan (PDP) 1999-2003, Wastewater Management Strategy, National Water Policy and Law, Agricultural Policy and Law, Forest Policy, Strategic Options, and Scenarios, National Policy and Legislation for Promoting the Conservation of Agro- biodiversity in the PNA’s Territories, The Gaza Coastal and Marine Environment Protection and Management Action Plan, Food Security Strategy, Public Health Law No. 20, Civil Defense Law; # 3 (1998), Industrial Estates and Free Industrial Zone’s Law; # 10 (1998), amongst others.

Environmental legislation, policies and planning are the responsibility of the Palestinian Environmental Quality Authority in cooperation with other relevant ministerial bodies such as the Ministry of Planning and administrative Development, Ministry of Agriculture, and Ministry of Local Government. The first Palestinian attempts to strategic planning in the environmental sector was done in 1999 when the national environmental strategy was prepared, which came at that time as a basis for environmental action for a period of ten years. This strategy has identified environmental issues of concern and the strategic objectives and priorities at the national level. Since then the environmental planning process remained, like other developmental and services sectors, ranging between the update of the Action Plan on and trying to recruit some funds to implement certain urgent and emergency projects since the second intifada started. This practice continued until recent Palestinian governments adopted a new systematic approach in planning which began with delineated launch of the so-called “plan of development and reform” and then followed by the start of the overall-comprehensive planning process, which appeared in the focus and objectives of the PNA.

In 2007, The Ministry of Planning and Administrative Development (MoPAD) (Ministry of Planning (MoP)) and the Ministry of Finance (MoF), in consultation with other PNA ministries and government has developed **The Palestinian Reform and Development Plan (PRDP) 2008 -2010**. The PRDP is a national plan, which sets out the PNA’s medium term agenda for Palestinian reform and development. It provides a coherent basis for the allocation of all government resources and reflects the commitment of the PNA to adopt an integrated policymaking, planning and budgeting process. The PRDP sets out a comprehensive framework of goals, objectives, performance targets and the allocation of resources to achieve them. The PNA’s

PRDP approach is intended to improve transparency, accountability, coordination and communication, and provide a basis for the introduction, over time, of effective performance management systems by providing a number of key documents. These include, in sequence of preparation/approval:

- A Palestinian National Policy Agenda (PNPA) – which sets out national policy goals, objectives and targets
- A Medium Term Fiscal Framework (MTFF) – which sets out the macroeconomic Framework and indicators, and determines resource availability (from both domestic and external sources). A Medium Term Development Plan (MTDP) – which outlines and identifies strategies for achieving national policy priorities and targets on a sectoral basis
- A Medium Term Budget (MTB) – this allocates multiyear recurrent and development resources on the basis of policy priorities.

Through integrated policymaking, planning and budgeting processes, these four elements are combined to produce policy oriented budgets, plans and targets. Taken together, they provide a framework for evaluating the government's performance in delivering results in line with national priorities.

Moreover, the Ministry of planning administrative Development, in consultation with other PNA agencies, has developed in a matrix form the **Palestinian National Authority Aid effectiveness Action Plan (2008-2010)**, and is intended for use by aid coordination bodies at different levels. This Action Plan is linked to the Partnership Principles for Effective Aid endorsed by the PNA Cabinet and AHLC (Ad Hoc Liaison Committee). Like the Partnership Principles, it is systematically linked to principles of the Paris Declaration. For example, Sector Working Groups (SWGs) spell out in more detail the implications and actions for their sector. The matrix is structured according to the hierarchy of the Paris Declaration principles (Ownership, Alignment, Harmonization, Managing for Results, Mutual Accountability), beginning with results and actions that are concerned with strengthening the PNA's ownership of the development process. The Action Plan is for the period of 2008-2010 so that it is synchronized with the PRDP. It focuses on results and actions that will put in place the building blocks for a more fully- fledged Action Plan from 2010 onwards. The 2008-2010 Action Plan was reviewed annually by the PNA and donors, and amended where relevant and necessary (PNA-MoPAD, 2008).

The overall comprehensive planning process has been translated in the Council of Ministers' decision in the PNA in August 2008 to prepare the overall **National Development Plan (NDP) for the years 2011-2013** during which the government using this national plan will be working on goals and priorities to ensure elimination of obstacles and the effects of Israeli occupation and establish an independent Palestinian state. The national plan summarized the government's policy agenda, macroeconomic and fiscal plan, and accountability framework for the next three years (PNA, 2011). The NDP sets out how the PNA will improve the different developmental sectors in the territory. Several strategic goals and priorities were set across main sectors including governance, social economy, and infrastructure (PNA, 2011) such as; Basic and Higher Education, Health, Agriculture, National Economy, Security, Employment, Tourism and Antiquities, Telecommunications and Information Technology, International Relations, Justice, Energy, Environment, Housing, Transportation, Water and Wastewater Management, Gender Equality.

It should be noted that previously, development plans were designed based only on economic considerations. Deterioration in environmental conditions and depletion of national resources were common consequences of such planning schemes. Only recently have environmental and/or social issues begun to be taken into consideration when planning for national and local development.

### **3. Challenges for Palestinian Sustainable Development**

The first step of achieving sustainable development is the establishment of a viable Palestinian State; sustainable development in the occupied Palestinian territory (oPt) can't be divorced from the existence of a Palestinian State. The PNA has been seriously working on and engaged in the process of State building and reform. The PNA has formulated and introduced a wide variety of measures to promote sustainable development in the oPt. Moreover, as mentioned earlier, the PNA has recently put much effort to develop the PDRP and further the NDP with the goal of establishing a sustainable Palestinian State. Still sustainability is not possible under occupation. The Israeli occupation remains the fundamental constraint to sustainable development and the main cause of environmental degradation in the oPt. The Israeli occupation has fragmented the continuity of the natural landscape, human capital accumulation, and physical infrastructure, and has severely limited the ability of the PNA to implement a comprehensive and effective national strategy for sustainable development. Sustainable development can't be achieved in the absence of peace based on justice. The current situation is not providing the Palestinians with full opportunities to formulate sustainable development policies.

The Israeli occupation policies and practices have always violated the Palestinians' basic human rights, including the right to development. The Israeli occupation has placed restrictions on the development of the oPt and individual human development. Israel seized complete control over the oPt's land and natural resources soon after the 1967 war. The enjoyment of the Palestinian indigenous citizens of their right to development has been hindered by the Israeli interests in the Palestinian land and resources. The imposed Israeli sets of policies and rules affect the Palestinian environment and natural resources and cause their degradation. Since 1967 huge areas of Palestinian's lands have been confiscated or closed off to them, in addition Palestinians access to their water resources has been limited to small fraction. Without sovereign control over the Palestinian natural resources it won't be possible for the oPt to implement comprehensive environmental management. Adequate natural resources will be vital to provide the basis for economic and social development.

The unsustainable utilization and exploitation of the natural resources in addition to the Israeli ambitions in the oPt have destroyed the vital Palestinian infrastructure and environment. The presence of the Israeli settlements, closed military zones, bypass roads, checkpoints, and the Segregation Wall has segregated the Palestinians into isolated enclaves and restricted or prevented their access to vital resources.

In 2005, the Israeli withdrawal from Gaza Strip represented a shift in Israel's policy, whereby Occupation would no longer be dictated by a direct military presence to facilitate policing and control. By fencing in Palestinian communities, controlling

their vital resources, and maintaining control of entry and exit points, the Israeli army can far more efficiently control the Palestinian population. Instead of easing movement restrictions in the oPt, the policy of internal closure has increased, while access to the Gaza Strip has been further restricted as a result of declining security in the region. Moreover, the ongoing Israeli air strikes on the Strip, by destroying the vital infrastructure, impose restrictions on the Gazan development; in addition to violating the right to development among other human rights.

Sustainable economic development is linked to the nature of relationship between Palestine and its dominate economic partner and occupier; Israel. The Israeli economic reforms have eliminated the Israeli need for a Palestinian labor force, whilst the economic growth observed in the West Bank and Gaza Strip is arguably donor-driven. Without a viable economy, the PNA will continue to be inhibited in funding and maintaining public infrastructure and social services.

The major challenges impeding the Palestinians from achieving sustainable development are summarized below:

- **Lack of Geopolitical Integrity in the oPt:**

The fragmentation within the oPt has caused great social, economic, and political implications. The lack of geographical continuity within the oPt has created a major physical impediment towards achieving Palestinian sustainable development. Thus, geographical cohesion within the oPt will form an important step towards a sustainable Palestinian State.

- **Lack of Environmental and Natural Resources Sovereignty:**

The Israeli policies not only have controlled the Palestinian environment and natural resources and prevented the Palestinians' from their right to fully utilize their own resources, they have previously and are also currently causing damages to the environment and depleting natural resources. This Palestinian environmental and natural resources sovereignty is an important factor in regard to the oPt's capacity for sustainable development. Systematic denial of environmental sovereignty by Israel has severely prevented the Palestinian authorities from addressing many of the growing environmental problems in the oPt. In addition, the lack of complete Palestinian environmental and natural resources sovereignty will perpetuate the ongoing inability for Palestinians' to sufficiently manage their natural resources within their borders which is the important precursor for environmental sustainable development.

- **The Presence of Two Contradictory Planning Schemes**

Palestine is characterized by the presence of two contradictory planning schemes that aim at exploiting its natural resources to serve two peoples: these are the endogenous Palestinian population and the Israeli population including the illegal Israeli settlers and army which has been controlling the area since 1967. The fragile Palestinian environment has been the first casualty of this reality. It has been exposed to pressures ensuing from the practices of the Palestinian population, on the one hand, and from the practices of the Israeli Occupation, on the other hand, which have significantly contributed to changing the environmental features of the oPt.

- **Population Growth:**

The high rate of population growth is presenting a challenge for implementing sustainable development in the oPt. The growing population means an increasing demand on the basic needs (water, food and energy) among other things. Population growth places high pressure on the environment and natural resources, and hence impedes the achieving sustainability in the oPt. Moreover, the high population growth leads to an increase in the labor force which necessitates the creation of thousands of jobs per year, forms a further challenge for sustainability in the oPt.

- **The Israeli Dominance over the Palestinian Economy:**

The Israeli- Palestinian economic relationship is characterized by an overwhelming Israeli dominance of the Palestinian economy. The Israeli occupation actions including closures and restrictions on movement and goods have essentially enabled Israel to control the Palestinian economy according to Israel's own geopolitical interests. Since the Second Intifada, the economic conditions in the oPt have deteriorated significantly. The Second Intifada led to the erosion of the Palestinian production base due to destruction, closure, and lack of maintenance. Israel is controlling resources necessary for development, telecommunications, construction and touristic areas. In addition, Israeli actions severely inhibit the ability of certain sectors to develop to their full potential. Furthermore, economic sustainability in the oPt will be vital to ensure genuine independence, and to address the high poverty levels currently existing there.

- **Poor Governance:**

The democratic government in the oPt lacks stability. The institutional and governmental frameworks are not capable of effective governance. The PNA continues to be plagued, by factional infighting, as well as allegations of corruption and nepotism. Furthermore, the PNA suffers from donor-aid uncertainty and systematic Israeli efforts aiming to undermine it. Crippled economy in the oPt, as well as the Israeli increasing pressure on the PNA have led to further complications in the situation, and in more hardships on the Palestinian population in the oPt.

### **The Economic Cost of the Israeli Occupation for the oPt**

Throughout the Israeli military occupation of the Palestinian territory, a systematic policy has been followed to exploit the Palestinian resources and properties. Actually, this occupation has been characterized by enormous damages, destruction and loss of the Palestinian life and properties, which without doubt has imposed a huge price tag to the Palestinian economy. The imposed Israeli measures and activities have prevented Palestinians from accessing much of their land and from exploiting most of their natural resources; it isolates the Palestinians from global markets, and fragments their territory into small, badly connected, “cantons”. These facts have been recently highlighted also by international economic organisations, including the World Bank, UNCTAD and the IMF. These reports were able to demonstrate parts of the damages inflicted by such occupation. However, a detailed and comprehensive quantification of the losses resulted from this occupation still needed. In this regards, and in spite of data scarcity and challenges in carrying out such immense task, the Palestinian Ministry of National Economy in cooperation with the Applied Research Institute-Jerusalem (ARIJ), have worked together to provide a systematic quantification of the

annual costs imposed by the occupation to the Palestinian economy. The results of this work were organized and presented in a bulletin, which aims to be an annual publication to monitor and quantify the costs of Israeli restrictions on the Palestinian economy.

It is well known that many of the restrictions have been in place since the start of the occupation in 1967, reflecting an unchanged colonial attitude of Israel, which aims to exploit Palestinian natural resources (including land, water and mining resources) for its own economic benefits. This “exploitative” policy has been coupled by the desire of Israel to prevent any Palestinian competition with Israeli economic interests. This has been (and still is) reflected in a series of Israeli obstacles related to customs, transportation and infrastructure which have prevented the development of a competitive Palestinian tradable sector and of Palestinian trade with non-Israeli partners.

At present, these restrictions have deepened further and despite not being able to quantify all the costs, the obtained estimations for 2010 were almost equal to the value of the entire Palestinian economy. It was found that the total costs imposed by the Israeli occupation on the Palestinian economy which we have been able to measure was USD 6.897 billion in 2010, a staggering 84.9% of the total estimated Palestinian Gross Domestic Product (GDP). In other words, had the Palestinians not been subjected to the Israeli occupation, their economy would have been almost double in size than it is today.

For quantifying purpose, the inflicted damages were classified as direct and indirect ones, and their corresponding costs were arranged according to this classification as shown in [Table 9.1](#) below. In this regard, direct costs are referring to those directly borne by the Palestinian economy due to Israeli restrictions; these include higher costs of electricity, water, and the movements of goods and people, whereas indirect costs are those concern the foregone revenues from production that have yet to be realized, due to the restrictions imposed by the occupation and they form the major part of the costs of occupation. These revenues would have materialised had Palestine been a free and sovereign country. Examples of the indirect costs include the value added from the extraction of minerals and salts in the Dead Sea, and the royalties from the development of the offshore marine gas field of Gaza. We limit the estimation of indirect costs to sectors such as natural resource exploitation, so that we can confidently quantify the opportunity cost of not developing any economic activities.

**Table 9.1: Costs of the Israeli occupation on the Palestinian economy, USD ‘000 and % of GDP (2010)**

	<b>Cost ('000 USD)</b>	<b>%GDP</b>
Gaza blockade	<b>1,908,751</b>	<b>23.5%</b>
Indirect costs of water restrictions	<b>1,903,082</b>	<b>23.4%</b>
Value Added from irrigation	1,219,667	15.0%
Jordan Valley agriculture	663,415	8.2%
Health costs from water	20,000	0.2%
Natural resources	<b>1,837,738</b>	<b>22.6%</b>
Dead Sea salts and minerals	1,102,869	13.6%

Value added from quarries	574,869	7.1%
Gas marine reserve	160,000	2.0%
<b>Direct utility costs</b>	<b>492,788</b>	<b>6.1%</b>
Direct electricity costs	440,876	5.4%
Direct water costs	51,912	0.6%
<b>Intl. Trade restrictions</b>	<b>288,364</b>	<b>3.5%</b>
Dual use (excl agriculture)	120,000	1.5%
Dual use agriculture	141,972	1.7%
Cost of trading	26,392	0.3%
<b>Movement restrictions</b>	<b>184,517</b>	<b>2.3%</b>
Dead Sea tourism	143,578	1.8%
Uprooted trees	138,030	1.7%
<b>Direct costs</b>	<b>3,012,451</b>	<b>37.1%</b>
<b>Indirect costs</b>	<b>3,884,398</b>	<b>47.8%</b>
<b>TOTAL</b>	<b>6,896,849</b>	<b>84.9%</b>
<b>Fiscal costs</b>	<b>1,795,685</b>	
<i>Memo item</i>		
Nominal Palestinian GDP (2010)	8,124,000	

Source: Authors' elaborations on various sources (see main text)

This quantification is likely to be an under-estimation of the true costs of the occupation, as we have made the choice to quantify only those costs for which reliable and relatively precise estimations could be provided. For example, probable missed revenues from not developing certain industries due to the import restrictions imposed by Israel in our estimation are not included. Furthermore, we have not been able to quantify the many different costs of the occupation because, in many cases, a lack of data prevents us from finding a reliable quantification of the costs. However, and as the shown in the above table, the majority of these costs do not have any relationship with security concerns but rather come from the heavy restrictions imposed on the Palestinians in the access to their own natural resources, many of which are exploited by Israel itself, including water, minerals, salts, stones and land. Over USD 4.5 billion per year, a full 56% of GDP is the cost (in terms of both foregone revenues and higher costs of raw materials) for the Palestinians for not being able to access their own resources.

Obviously, the huge costs of the Gaza blockade are determined by a myriad of Israeli restrictions, including the almost complete closure to international trade, the disruption caused to the electricity production, the limited access to the sea resources and the continued shelling of infrastructure. These restrictions have led to the collapse of the economy, whose growth path has diverged from that of the West Bank since 2006. The restrictions on access to water (in the West Bank) and on access to natural resources deprive the Palestinians of enormous sources of revenues associated with the economic activities based on these natural resources. These include the expansion

of irrigated agriculture, the extraction of salts and minerals from the Dead Sea, which is off limits to the Palestinians while is carried out by Israeli and settlers' companies alike, the mining of much of the gravel and stone available in the West Bank, most of which is used by Israel, and the development of the Gaza offshore gas field. Similarly the lack of access to the Dead Sea has made the development of a high potential Palestinian tourism industry along its shores impossible.

Other losses imposed by the occupation include the extra costs of electricity and water provision faced by the Palestinians, who are dependent on Israeli supplies for such provision due to the restrictions imposed on the electricity generation and on the access to water, the costs imposed by the restrictions on exports and imports, which translate into unavailability of inputs and higher production costs, the costs associated with the barriers to the movement of goods and people within the West Bank, and the destruction of productive assets, particularly the uprooting of trees.

Despite the magnitude of the estimated losses, these are likely to be a severe under-estimation of the real costs imposed by the occupation on the Palestinian economy, as we have not been able to measure all the different costs of the occupation due to a lack of data. For example the prohibition to import goods such as lathe machines, which are essential inputs in the machinery production, has most probably stifled the development of the whole Palestinian manufacturing sector. However in the absence of an estimation of the potential size of the sector in the absence of such restrictions, it is not possible to quantify their costs.

Not only does the occupation maintains the Palestinian economy small but it also hinders Palestinian fiscal balance by reducing its fiscal revenues in two ways: directly, by preventing an efficient collection of taxes mainly due to the prohibition of the PNA to operate at the international borders; and indirectly, by artificially reducing the size of the Palestinian economy (as we have seen so far) and therefore its tax revenues' base. We estimate that the direct fiscal costs of the occupation amount to USD 406 million per year while the indirect fiscal costs total USD 1.389 billion per year. This implies that without the occupation, the Palestinian Authority would run a healthy fiscal surplus without the need of donors' aid, and would be able to substantially expand fiscal expenditure to spur further social and economic development.

Although the estimation of the costs have resulted huge values, it is worthy to mention that various major costs were not included in this work and these include the following:

1. Costs associated with obstacles to the international movement of people;<sup>117</sup>
2. Loss of investments in Area "C" due to building restrictions;
3. Indirect losses from import restrictions in industry and ITC ("dual use items" list);
4. Indirect losses from restrictions on telecommunications;
5. Losses from the construction of the wall, especially in terms of severing economic links between the Palestinians in Israel and the West Bank;

<sup>117</sup> Estimates could have been based on the total number of potential investors' visas rejected multiplied by the potential value of each investor. However it is has not been possible to estimate the value of the latter.

6. Losses from restrictions to the East Jerusalem market; especially for pharmaceuticals and telecommunications.

#### **4. The Road to Sustainable Palestine**

Although the road to sustainable development in the oPt is paved with challenges and obstacles, still there is an opportunity for sustainable development in the territory. Various interventions play major roles in achieving the Palestinian sustainability. Below is a list of these interventions:

1. Establish a national commission for sustainable development that should consider respect of human, environmental, social, and cultural rights. The commission needs to include relevant ministries, NGOs and private sector.
2. Restore the Palestinian sovereignty over the Palestinian natural resources. Without sovereign control over the Palestinian natural resources, the oPt will be unable to implement comprehensive environmental and otherwise managements. Sufficient natural resources will play a strong determining role in having a viable Palestinian State by providing the basis for social and economic developments.
3. Ensure that the exploitation of Palestinian natural resources should be in a sustainable manner.
4. Adopt new techniques and tools and green technologies to help in protecting and sustaining the natural resources, such as environmental friendly cars, energy saving devices, solar panels, and water conservation devices.
5. Utilization of non-conventional resource including: solar power, treated wastewater, and desalinated water.

**Box 1**  
**Utilizing Non-Conventional Resources**

The use of treated wastewater is an important option that should be considered within the Palestinian case. Treated wastewater is considered a vital non-conventional water resource that can replace fresh water used for irrigating agricultural lands after the adoption of the reuse recommendations indicated by the EQA, MoA, and PWA. Proper treatment of wastewater can alleviate the pressure on precious fresh water resources in the oPt, thus contributing to solving the water supply shortage problem in the oPt. Palestinian farmers should be encouraged to utilize this water resource. Moreover, wastewater treatment plays a major role in alleviating environmental degradation in the oPt, in addition to protecting the population from the health threats associated with wastewater. Therefore, the three levels of wastewater treatment projects (Centralized Treatment Plants, Collective Treatment Systems, and Onsite Small Scale Treatment Systems) should be implemented more in the oPt as the available infrastructures are not sufficient.

Although solar radiation can provide a vital source of renewable energy in the oPt, the applications of solar energy in the oPt are limited mainly to water heating and photovoltaic technologies. Due to the absence of fossil fuel sources and depleting energy supplies as a result of several years of occupation, the utilization of renewable energy sources should be promoted and enhanced. In addition, solar energy is considered an environmental friendly energy source which has negligible environmental negative impacts compared to other traditional energy sources. More photovoltaic electrification projects should be implemented in the oPt, these can contribute to great extent in reducing the amount of dependency on imported electricity, which comes mainly from Israel.

6. Adopt Local Agenda 21 approach.
7. Develop the infrastructure and improve the basic services provided for the Palestinian citizen. This includes solid waste collection and disposal system, sewage network and treatment plants, education, telecommunication, road networks, and water supply.
8. Preparing a comprehensive traffic management plan and constructing ring roads that encircle and link urban areas in order to route traffic outside the city center and alleviate traffic congestion.
9. Clarify the mandates of public institutions through reviewing and developing frameworks, legal acts and guidelines, in addition to encouraging the cooperation among these institutions.
10. Encourage the involvement of the private sector at all levels of environmental management and planning.
11. Building a strong and independent economy. Economic viability will be vital to ensure genuine independence, and to address the high poverty levels currently existing in the oPt. Economic self-sufficiency is a crucial component

of the oPt's capacity for self-determination.

12. Promote to the international community the costs of the environmental damage and the use of economic instruments, taking into account the approach that the polluters should bear the cost of pollution, with due regard to the public interest and without distorting investment opportunities. This should include the compensation of the illegal Israeli practices against the Palestinian environment.
13. Promote good and effective governance to ensure political stability, effective economic planning, security and provision, as well as environmental management. This will be vital to improve social and economic development in the oPt.
14. Capacity building and human resources development to ensure better and effective environmental management and sustainable development planning.
15. Promote public awareness regarding environmental rights and sustainable development. The right of environmental education will have a significant effect on how people form attitudes towards the environment.
16. Increase and ensure the public participation of all concerned citizens and social sectors, at all levels of environmental management and planning.
17. Develop community-based environmental and nature resources management, it is suggested to establish national parks and nature reserves for this purpose.
18. Enforce the environmental law and apply the polluter pay principle.
19. Strengthen regional and international cooperation and coordination through harmonization of national action with international and regional conventions, activates and plans.

**Box 2****Regional Cooperation to Increase Water Supply in the oPt**

The concept of exporting Turkish water has been a constant in Turkish foreign policy since the late President Turgut Özal in 1986, who proposed an extensive "Peace Water Pipeline" that would cost a \$21 billion USD to transfer water originated from Seyhan and Ceyhan Rivers in Anatolia, Turkey via dual pipelines to supply the major cities in Syria, Jordan, Israel, and the Arab Peninsula. However, the idea has never found a chance of implementation, met with many detractors, many of whom believed that desalination of water is a cheaper alternative. However, the real obstacle is always political but the idea still a valid one to help the ease of water issues within Palestine and the Arab land as a whole. Since the original "Peace Water Pipeline" proposal had failed in getting support from some countries, senior Turkish officials have suggested that in the context of facilitating Arab-Israeli peace, consideration must be given to a shorter pipeline from the Seyhan or Ceyhan rivers in Turkey to Jordan via Syria with \$5 billion estimated cost.

On the contrary of many countries in the Middle East, which are characterized with semi-arid climate and scarcity of water, Turkey has been blessed with a relative abundance of water resources. Turkey by nature is a significant exporter of water. Ambassador Önhon emphasized that Turkey believes it can play an important and constructive role in the Middle East. Moreover, Turkey is in unique position of serving as a bridge between Europe and the Middle East. Turkey's State Hydraulic Works (DSI) has calculated that the average flow in the Seyhan and Ceyhan rivers is 39, 17 million cubic meters per day. The planned use of this water in Turkey is approximately 23, 04 million cubic meters per day. Therefore, there are 16.1 million cubic meters of surplus per day in Turkey, which will provide sufficient water for export.

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P.O.Box 860, Karkafeh St.

Bethlehem, Palestine

Tel: +970-2-2741889

Fax: +970-2-2776966

Website: [www.arij.org](http://www.arij.org)