Palestinian National Authority

National Strategy for Solid Waste Management in the Palestinian Territory 2010-2014

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Content

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Preface by Head of Steering Committee

Due to the challenges facing the Solid Waste sector in Occupied Palestinian Territory and its major negative impacts on the water resources in particular, and on the environment in general, and the implication this has on the public health of the Palestinian citizen, in addition to the tremendous economical and social costs the Palestinian community bears, the Ministerial Cabinet took, on 28/4/2008, its decisions No. (29/53/12)-Year 2008, which requires the formation of the Steering Committee (SC) for the National Strategy for Solid Waste Management (NSSWM). The committee included a member of the Ministry of Local Government (director) and members from the Ministry of Planning, Ministry of Economy, Ministry of Health, Ministry of Agriculture, Environmental Quality Authority, Water Authority, and with participation from the Ministerial Cabinet Secretariat. The Ministerial Cabinet Secretariat representative acted as a secretary of the committee.

The SC has worked hard aiming at achieving the widest participation of partner national institutions as well as sponsor organizations. These include the German Technical Cooperation (GTZ), joint service councils, municipalities, non-government organizations, and academic institutions. The committee also utilized regional and international expertise. The SC formed the Core Team (CT) as a technical support team, which conducted an inclusive workshop in an early stage. The work of both the SC and the CT led to the conduction of a 3-day workshop in Jericho, which was attended by the members of the Steering Committee and several experts, under the support of the German Federal Government, through the GTZ Solid Waste Management Programme. The in-depth and objective discussions during that workshop led to vital developments in drafting the strategy in hand. We, in the Steering Committee, would like to thank everyone who contributed to the preparation of this strategy. We especially like to thank the German Technical Cooperation (GTZ) for providing the technical and financial support needed to prepare the National Strategy for Solid Waste Management in the Palestinian Territory.

The Ministerial Cabinet has endorsed the strategy by Decree No. 13/49/05 on May 2010. This approval has strengthened our hope for a better future. For one reason, because this approval coincides with the declaration of the Ministry of Local Government sectoral strategy. It also falls within the Palestinian national effort to end the occupation and establish the Palestinian State. This will be an invitation to us to move swiftly to the execution phase. Hence, we join hands with all, citizens and institutes, for a speedy and successful implementation of all the interventions of this strategy, to declare the birth of a integrated and effective management of the solid waste sector. This has an utmost importance to our health, society, and economy. It also has a key developmental and political dimension within our national march to ending the occupation and earning our independent Palestinian State, with Holy Jerusalem as its capital.

Eng. Mazen Ghonim
Deputy of the Ministry of Local Government
Head of Steering Committee

National Strategy for Solid Waste Management in the Palestinian Territory

(Executive Summary)

The "National Strategy for Solid Waste Management in Palestine 2010-2014", hereinafter referred to as NSSWM, is the first cross-sectoral strategy for solid waste (SW) in the Palestinian Territory. It constitutes the framework for all decisions, programs, activities, and medium-term investment plans, aiming at developing the SW sector in the Palestinian Territory. The components included in this strategy are:

1. The introduction which includes the methodology and a background on the SW sector in the Palestinian Territory.
2. The policy principles that form the basis for the strategy.
3. Assessment of the current status of solid waste management (SWM) in the Palestinian Territory and the key issues.
4. The strategic vision, strategic objectives and sectoral policies.
5. Strategic interventions and responsibilities of parties involved.
6. Implementation of the strategy, monitoring and evaluation indicators

The NSSWM, which was issued by the Steering Committee formed according to the decision of the Palestinian Ministerial Cabinet No. 53 of Year 2008. The document was produced and lastly endorsed by the Ministerial Cabinet after wide consultation through a partnership process involving several stakeholders, including key Palestinian ministries and national entities in participation with other stakeholders involved in the SWM sector. Preparing the strategy was supported by the German Federal Government, through the German Technical Cooperation (GTZ) Solid Waste Management Programme.

The development path for SWM sector in the upcoming five years set by this strategy is aligned with the overall national Palestinian development goals and the strategic vision of establishing a Palestinian State according to the 2009 plan: "Palestine — Ending the Occupation and Establishing the State".

Remediation of key issues, setting the foundation for a more effective and efficient SWM systems and practices though improving the legislative, organizational, technical and economical frameworks are among the main aims of the strategy. The strategy also aims at reducing the negative impacts of SW on health and environment, responding to urgent and priority issues and mid-term needs. The envisaged policies and interviensions set by the strategy aims at improving the quality of the life of Palestinians and putting Palestine on the way towards achieving an integrated and sustainable SWM sytems and practices in the future.

The implementation of sound and integrated SWM in Palestine is confronted with several challenges at the legislative, organizational, technical, environmental, and financial levels. This situation is further complicated by the lack of accurate statistical data needed for decision making, planning and monitoring operations. The complications of the current political situation adds its own challenges, such as the limited Palestinian control over land and resources, in addition to the disposal of Israeli waste (including hazardous waste) in occupied Palestinian land.

The SW sector has drawn attention in the previous years, at all levels, due to its social, economical, and environmental impacts. The Palestinian government made several achievements in this regard, including passage of several relevant laws, including Local Authorities Law No. 1 of 1997 regarding Local Government, the Environment Law No. (7) of 1999, and the Public Health Law of 2004. Additionally, some sanitary landfills were launched, which proved successful and curtailed

the negative health and environmental impacts of random dumpsites, common throughout the Palestinian areas. Other achievements include many public awareness efforts, the implementation of exemplary models for infectious medical waste treatment, and providing equipment for waste collection, transport, and disposal operations. Several international donor organizations contributed to the support of SW sector development projects and programs, especially in the development and funding of regional landfilling facilities and in the procurement of waste collection and transport equipment.

In spite of the achievements made so far, the SW sector in the Palestinian Territory still faces many hurdles, mostly due to the insufficiency of legal, organizational and institutional frameworks, and due to the lack of strategic vision, policies, and programs needed to develop this sector. This resulted in the delay of important actions, such as developing the necessary infrastructure and support systems, which usually require financial allocations beyond the ability of service-providing agencies, especially at the local level. This situation has created many gaps in the management system for SW at the national, regional, and local levels and unsafe methods were used to fill these gaps. Moreover, the concerned parties were ultimately unable to take effective actions to completely limit the health and environmental impacts of SW, and to achieve optimum use of available resources. This reflected on other aspects of the SWM process, such as waste minimization, recycling, and treatment operations, many of which are still individual initiatives without a governing political or institutional framework. Overall, this situation has had its negative health, economical, social, and environmental consequences, in addition to its impact on the esthetic image of urban Palestinian environment.

It is, therefore, safe to say that the SWM file has been handled over many years without sufficient attention to the social, economical, environmental, legislative, or technical dimensions of this sector, or to the dramatic consequences of the lack of sound policies on the long term, which will bear even a higher price tag if the status quo is to continue without remediation. This led the Palestinian government to declare the SW sector as one with high national priority.

In light of the facts on the ground and according to the assessment of the current status of Palestinian SWM, the NSSWM has established a national vision and objectives to improve this sector. In doing so, a multi-fold approach was employed to determine policy directions that will bridge the gap between the current status and the desired development objectives of the Palestinian SWM sector. While some of these policies targeted developing the existing systems and finding solutions to the urgent issues of the SWM sector, other policies were focused on setting the foundations for sustainable and integrated SWM, taking into account the time period allocated to implement the strategy. Below are the strategic objectives and the sectoral policies adopted by the NSSWM, which are detailed in Section 4 of the strategy document.

Strategic Objective One: An effective legal and organizational framework for SWM

Policy (1): Development and update of the legislative framework supporting integrated SWM

Policy (2): Strengthening the organizational frame of national institutions and supporting their complementary roles in SWM

Strategic Objective Two: Strong and capable institutions

Policy (3): Establishing an integrated, coordinated, and sustainable institutional approach to support institutional capacity building in the SWM sector

Strategic Objective Three: Effective and environmentally-safe management of SW services

Policy (4): Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens

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

Policy (6): Encouraging the reduction of SW quantities destined for landfilling

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

Policy (8): Reducing the amounts of greenhouse gases (GHG) emitted as a result of SW activities

Strategic Objective Four: Financially viable and efficient SWM services and activities

Policy (9): Reducing the cost for SW collection and transport

Policy (10): Achieving cost recovery and self-financing for SWM operating costs

Strategic Objective Five: Principles and mechanisms suitable for managing medical, hazardous, and special wastes

Policy (11): Creating appropriate inventory and tracking systems for hazardous waste

Policy (12): Treatment of medical waste before its final disposal according to the "polluter pays" principle to limit its negative health and environmental impacts

Policy (13): Minimizing the negative health and environmental impacts of special waste

Strategic Objective Six: Increasing the participation of the private sector

Policy (14): Creating an enabling investment environment that encourages the private sector to participate

Strategic Objective Seven: A more participating and aware community

Policy (15): Promoting the partnership spirit and strengthening the alliance between service providers and the served communities to enhance the awareness of SW issues.

Strategic Objective Eight: Effective information and monitoring systems

Policy (16): Establishing a unified national database for SW and institutionalizing monitoring systems.

National Strategy for Solid Waste Management in the Palestinian Territory

1. Introduction

1.1. Background

In April of 2008, the Steering Committee for the Preparation of the National Strategy for Solid Waste Management, which included members from several Palestinian ministries and national institutions, was formed according to the Palestinian Ministerial Cabinet decision No. (29/53/12) (Appendix 1-annex B). The decision came in response to the desire of the Palestinian government to adapt integrated policies and programs to develop the Palestinian SW sector, within a clear strategic vision and objectives to draw the path for this sector for the next five years.

The "National Strategy for Solid Waste Management in the Palestinian Territory 2010-2014" (NSSWM), was prepared in conformity with the document of "The General Framework to Prepare the National Strategy for Solid Waste Management", and was lastly endorsed by the Palestinian Ministers Cabinet on May 16,2010 upon Decree No 13/49/05. This strategy is the result of joint efforts by several Palestinian ministries and national entities involved in the SWM sector. The project was supported by the German Federal Government, through the German Technical Cooperation (GTZ) Solid Waste Management Programme.

The Palestinian government aims, through the implementation of this strategy, to achieve a real progress in responding to the urgency of current SW issues and to the medium-term needs to develop the SW sector. This should be achieved within a strategic perspective that aligns the foundations of developing this sector with the strategic goals and visions of national development and the common vision for a Palestinian state according to the 2009 plan "Palestine — Ending the Occupation, Establishing the State".

The strategy, which is the first cross-sector planning for SWM, has considered the policy principles, the vision and strategic objectives of priority, policies and strategic interventions, the responsibilities of involved parties, and the indicators for evaluation and assessment. Thus, it constitutes the strategic framework for all decisions, executable programs, and investment plans for this sector, within its time frame.

The sixteen policies defined by the strategy and the interventions associated with these policies present a challenge to the Palestinian government to achieve the desired strategic objectives, which are hoped to set the Palestinians on their way to sustainable and integrated SWM. In this regard, the Palestinian government stresses the importance of synchronizing the efforts of all parties involved, including governmental agencies, the private sector, and non-governmental organizations, to improve the SW sector for the sake of betterment of the Palestinian quality of life.

1.2 Methodology

The strategy was drafted following several stages and planning steps, characterized by the extensive and effective participation of partner ministries and national institutions involved in the SWM sector. These included the Palestinian Ministry of Local Government, the Ministry of Health,

and the Environmental Quality Authority, as key parties, in addition to the Ministry of Industry, Ministry of Agriculture, Ministry of Planning, and the Palestinian Water Authority. The strategy preparation stages, which are detailed in the general framework document (Appendix 1) include:

The preparatory phase

1. The document: "The General Framework to Prepare the National Strategy for Solid Waste Management in the Palestinian Territory" was prepared as terms of reference to prepare the NSSWM.
2. The document of the policy principles constituting the basis for the NSSWM was prepared, with the participation of ministries and authorities presented in the CT formed by the Steering committee (Appendix 1- annex D).
3. Three workgroups were formed to follow-up on the institutional, technical, and financial issues of the SWM sector. Representatives of key national entities were included in these workgroups, in addition to representatives of other parties such as municipalities, joint service councils (JSC), Non-government organizations (NGOs), and academic institutions, in order to enhance the exchange of information and expertise through participatory approach.

The strategy preparation phase

1. The current status of SW sector was assessed and key issues were identified. This resulted in the report: "Assessment of current status of SWM in the Palestinian Territory", which was organized into three sections detailing the institutional, technical, and financial issues. The identification of the key issues was a primary outcome of this phase (Appendix 2).
2. The vision and strategic objectives were defined based on the results of the assessment of the current status and the key issues identified.
3. Strategic alternatives, such as the number and distribution of sanitary landfills, were studied and analyzed and policy directions were identified.
4. Policies and strategic interventions were formulated based on the outcome of the previous phase, and based on the outcome of numerous workshop meetings and discussions involving all concerned ministries and institutions.
5. The tasks of concerned parties were defined and the final drafting for the NSSWM was made in a final workshop that approved the objectives, policies, and interventions, and defined the responsibilities of all key executing parties.

1.3 General background on the SW sector in the Palestinian Territory

The amount of solid waste produced in the Palestinian Territory is estimated, according to the Palestinian Central Bureau of Statistics, at 78,644 tons per month, with organic waste constituting about 80% of that amount. The daily production rate of residential SW was estimated in 2009 at about 2,321 tons per day (1,710 in West Bank, 611 in Gaza Strip). The average daily residential SW production per dwelling is 3.5 kg/day (3.9 in West bank and 2.7 in Gaza Strip), at an average rate of 0.6 kg/capita.day (0.7 in West Bank, 0.4 in Gaza Strip). The quantity of SW produced varies according to the type of locality (city, village, refugee camp), and according to the type of prevailing economic activity and consumption patterns.

Based on data available from the Palestinian Central Bureau of Statistics for 2009, the amounts of SW produced by healthcare centers was estimated at 1,202 ton per month (472 in West Bank, 730 in Gaza Strip). Solid waste from industrial establishments was estimated at 7,807 ton per month (6,308 in West Bank, 1,499 in Gaza Strip).

The management of this SW is faced with many hurdles at the legislative, organizational, technical, environmental, and financial levels, especially in light of the lack of accurate national statistics on the amounts of SW produced, the source of waste, or its composition. This resulted in difficulties in planning and decision making in relation to the SW sector. The Political reality

of the Palestinian Territory adds yet another challenge. The limited Palestinian jurisdiction and control over resources in their areas was a prohibitive factor in implementing several projects and in constructing regional facilities, especially the full Israeli control over the "C" areas, and the lack of available land. The Israeli practice of disposing of Israeli waste, including hazardous waste (most of which is unidentified from unknown sources), in the Palestinian areas, has further aggravated the health and environmental impacts of the SW problem. It is worth mentioning that the latter Israeli practices are in explicit violation of the Oslo agreement and the Basel convention on hazardous waste.

The SW issue has gained significant attention in recent years, not only due to its environmental implications, but also due to the social and economical consequences of this issue. The Palestinian government became aware of the level of the SW problem, and managed to take actions to promote and advance this sector. These actions include the passage of Law No. (1) of 1997 regarding Local Government, the Environment Law No. (7) of 1999, and the Public Health Law of 2004, which are the most relevant laws to SWM. This is in addition to other laws, such as the Investment Law, the Water Law, the Agriculture law and other laws which are indirectly related, but of no less importance, to the SWM sector. The Palestinian government has also prepared regulation drafts, such as the SWM regulation and the medical waste management regulation, which are currently under study.

Other achievements made in the last several years, such as the launching of a number of regional sanitary landfills (the Zahrat Al-Funjan landfill in Jenin, Jericho landfill in Jericho, and Deir-El-Balah in Gaza Strip), have contributed to limiting the health and environmental damage caused by the random dumpsites, commonly spread throughout the Palestinian Territory. They also helped secure safe SW disposal services to a number of residential areas in several districts. A number of international donor entities have played a significant role, since the establishment of the Palestinian National Authority in the development of the SW sector. These organizations include the World Bank, the German Technical Cooperation (GTZ), the Japan International Cooperation Agency (JICA), the EU, and the governments of the Netherlands, Italy, and Spain, to name some. The total funding provided by foreign donors in support of the Palestinian SW sector has totaled $72.274 Million since 1994. Most of that funding was spent on infrastructure projects, such as waste collection, transport, and disposal facilities (Appendix 2).

In spite of the efforts mentioned above, the geographical expansion of SW collection services (now covering about 90% of Palestinians), the implementation of model projects for medical waste treatment, training and equipping, and society awareness initiatives, the lack of a modern national vision and clear agenda for the management of the SW sector still causes gaps in the Palestinian SWM systems. Additional difficulties are also posed by the insufficiency of legislations inherited throughout years of occupation, loop-holes in the current laws which resulted in ambiguity in institutional frames, and the overlap and conflict in the SWM duties of various institutions. This situation created gaps in the SWM systems, and fractionated and unnecessarily duplicated the SWM efforts. It also fractionated and limited the funding available to most involved institutions, due to the lack of development vision and multiplicity in funding avenues. These shortcomings in planning and insufficient funding over the last years obstructed key infrastructure-development and facility-building projects. This is particularly true at the level of the local institutions, which are usually at most disadvantage in securing funding and building capacity. Ultimately, it was not possible to take the needed actions to guarantee the elimination of health and environmental impacts of SW and to optimize the use of available resources.

The shortcomings in developing integrated SWM systems in the Palestinian Territory have manifested themselves in other aspects of the management process as well. For example, recycling and reuse efforts of SW were largely limited to unorganized initiatives by individuals or the informal sector. Additionally, unsafe approaches to dealing with SW were followed. These include the use of random dumpsites, open waste burning, and mismanagement of medical and

hazardous waste, with all the consequences of the aforementioned on the economical, social, and environmental aspects of the Palestinian quality life. To summarize, the Palestinian SWM file has been managed without paying enough attention to the social, economical, environmental, technical, and legislative aspects of relevance to this sector or the magnitude of resulting complications. These complications carry high price tag should the status-quo be allowed to continue without change. This led the Palestinian government to declare this sector of national priority.

2. Policy principles

The policy principles form the guiding principles for the NSSWM and, at the same time, the reference to which the various involved parties can resort for guidance. Below is a summary of these principles, which are detailed in the policy principles document (Appendix 1- annex D):

- The principle of sustainable SWM, which ensures optimal use of resources and protection for the environment.
- Clarity of roles and responsibilities and the separation between regulatory, monitoring, and executive duties.
- Facilitated availability of information and its transparent exchange among parties involved
- Transparency of institutional, financial, monitoring, and administrative systems
- The principle of partnership based on integrity and clarity of roles of the various parties
- Recognizing the importance of the private- (formal and informal) and non-government sectors
- Recognizing the vital role of local community and the importance of citizen›s participation in SWM
- Transparency in dealing with citizens' complaints
- The principles of "polluter-pays" and "producer-pays"
- The principle of self-funding and providing services at reasonable cost
- The principle of "economy of scale" in planning and developing SW services
- The gradual implementation of initiatives, technologies, and new models in the fields of SW reduction, treatment and recycle.
- Creating incentives to encourage successful initiatives and practices
- The compatibility of technology and equipment used in SWM to local conditions
- Penalty system against parties that do not adhere to the appropriate procedures in dealing with SW

3. Assessment of the current status and key issues

The assessment of the current status of SW sector in the Palestinian Territory resulted in the identification of a number of key issues, reflecting the problems and challenges facing this sector. These challenges constitute the input to identifying the objectives of the NSSWM. The assessment included institutional, technical, and financial aspects, which were detailed in the report on current status of SWM sector (Appendix 2).

3.1 Institutional and organizational issues

- **Lack of effectiveness and update of the legislative framework governing the SWM sector**
  The current legislations governing the SWM sector are limited, inadequate and ambiguous. They lack comprehensiveness in addressing SWM issues from a modern perspective. Additionally, the legal text is contradictory in cases. The implementation of these legislations is still incomplete due to the absence of regulation for most current laws and the inadequate enforcement mechanisms, which are no less important than the legislations themselves. The shortcomings in the current legislative framework have created gaps and problems in the management of the SW sector at all levels. (Appendix 2).

- **The need to develop specifications and standards for various stages of SWM**
  There are currently no Palestinian standards for many aspects of SWM. For example, there are no Palestinian standards for the siting, design, or operation of sanitary landfills. Consequently, these landfills follow the standards of the donor agency that funds them. Similarly, there are no Palestinian standards for dealing with special, hazardous, and medical wastes, or for transfer stations, recycling operations, etc. Making these standards available is vital for achieving effectiveness and safety in dealing with SW and for protecting the environment.

- **The ambiguity of general institutional frame for SWM and the overlap and conflict in roles and authorities**
  The institutional framework for SWM was impacted on the national level by the changes witnessed by the public institutional framework of the Palestinian government. The key roles of SWM in the Palestinian Territory at the national level are distributed among three national institutions, namely; the Ministry of Local Government, the Ministry of Health, and the Environment Quality Authority, in addition to other institutions of relevance, such as the Ministry of Agriculture, the Ministry of Planning, Ministry of Economy, and the Palestinian Water Authority.

  The ambiguity in roles and responsibilities, as well as the overlapping in the operation of these institutions resulted from the ambiguity of the governing legislative frames, and the variations in interpreting the responsibilities of institutions related to the SWM sector. This led to weak coordination and complementation of efforts. Thus, there is a need to revise the institutional arrangements related to SWM to limit the overlapping in efforts, to minimize the depletion of resources, and to achieve better overall SWM (Appendix 2).

- **Insufficiency of financial, human, and organizational capacities of institutions involved in management of the SW sector**
  The current status shows lack of capacity (human, financial, and organizational) at the national and institutional levels, and to a less extent at the level of Joint Service Councils (JSCs). There is a need to build these capacities to achieve effective and updated management of SW, especially in systems for which there is limited previous exposure, such as medical wastes and transfer stations. There is also a need to develop capacity for other systems, such as recycling processes, hazardous waste management, etc. This lack of capacity may cripple future efforts to build effective SWM, if not remediated.

- **The absence of a comprehensive system for authentication and analysis of data and the insufficiency of monitoring and evaluation systems**
  In spite of the availability of a significant quantity of data, from various sources related to SWM in the Palestinian Territory, there is no unified system for managing, authenticating, or synchronizing this data at the national level. Moreover, much of the data suffers from partiality and inaccuracy, especially in data related to the amounts, classification, and composition of SW, and numbers and level of expertise of human resources involved in SWM. This hindered the availability of input for appropriate planning, control, and decision making.

Additionally, the weakness of the monitoring process, coupled with the outdated indicators for monitoring and evaluation, does not allow efficient technical, financial, and environmental monitoring of SW operations. It is worth mentioning here that the joint service councils for SWM at the district level have managed to create systems for monitoring and evaluation which can be a starting point for further improvement.

- **Limited participation of the private sector in SWM**

The participation of the private sector in SWM operations is rather limited, and is mostly confined to waste transport processes, in addition to some recycling operations and equipment maintenance. This is in addition to the efforts of the informal sector in waste collection and separation for recycling purposes in some areas. Although these are interesting initiatives, many of them lack the basic health and safety requirements.

Recently, the private sector in the Palestinian Territory started to show more interest in separation and recycling projects. However, the absence of incentives and the limited local expertise in the private sector itself still limits the participation of this sector in SWM (Appendix 2).

- **Insufficient public awareness in SWM issues and weakness of participation mechanisms**

The local community plays a vital role in the success or failure of any SWM system. In spite of the studies which indicate that the Palestinian community has a relative awareness of the SWM issues, many negative societal behaviors, that have implications on the health, environment, and image of the Palestinian community, still exist.

In recent years, several initiatives surfaced with the goal of enhancing public awareness of SWM issues. These initiatives resulted in programs and activities conducted by NGOs, governmental bodies, Local Authoritiess, and Joint Service Councils. Nonetheless, there is much room for nurturing and developing this awareness into positive societal practices that contribute, via effective mechanisms, to healthy management of the SW sector.

3.2 Technical issues

- **The need to increase the efficiency of SW collection and transport operations**

About 90% of the Palestinian localities in the West Bank and Gaza Strip are covered with SW collection and transport services. The success of these services varies by localities. The poor financial and human resources of Local Authorities (especially at the level of small Local Authorities), coupled with the low collection rate of SW service fees, has forced many Local Authorities to cover the cost of the SWM services using the budget allocations of other vital services. As a result, it became difficult for these Local Authorities to provide high-quality SWM services to its

citizens. In some cases, SW collection takes place in absence of appropriate standards or using inappropriate collection vehicles. The latter, in many cases, are not compatible with the waste collection containers used. In most local authorities, including major cities, the distribution of waste collection containers and the routing of collection vehicles is determined neither according to known scientific methods, nor as a result of a careful analysis of viable alternatives.

Other technical problems facing the local authorities include the use of obsolete equipment and vehicles, poor preventive maintenance, and weak monitoring and control systems. All of these issues aggravated the price tag of SWM for these authorities and depleted their budgets. On the other hand, some Joint Service Councils have managed, using the "economy of scale" principle, to provide similar services to those provided by local authorities at a higher effectiveness and efficiency (Appendix 2).

- **Closure or rehabilitation of random dumpsites to avoid their environmental, health, and aesthetic impacts**

A number of random dumpsites were closed when regional sanitary landfills were constructed in the Palestinian areas. However, field studies show that a large number of random dumpsites, estimated at 147, still exist in the West Bank and Gaza Strip. In spite of the urgency of this problem, due to the impact of these dumpsites on the environment and health, solving the random dumpsites problem requires effort, time, and funding that are beyond the capacity of Local Authorities. Yet, these local authorities are mandated to close the dumpsites sites according to the current law.

- **Limited initiatives and expertise in the areas of waste minimization, reuse, and recycle**

There is an evident absence of the concept of waste minimization at the source, and the Palestinian expertise in this field is still limited. This expertise are confined to individual initiatives at homes, which is linked to the environmental awareness of some Palestinian families, in addition to some institutions which follow the policies of waste minimization and segregation in order to obtain the ISO-14001 certification.

On the other hand, there are some models and experiments for waste recycle, which have not been publicized enough to extract lessons from them. As a result, achieving significant waste minimization and recycle goals requires national policies aiming at elevating public awareness in this area and encouraging the private sector to invest in SW separation and recycle operations (Appendix 2).

- **The need for effective management of medical waste**

The current status analysis show that a large number of medical facilities exist in the Palestinian Territory which produce a total of 1,202 tons of medical waste monthly, according to the 2009 data of the Palestinian Central Bureau of Statistics. Although many of these medical establishments are committed to separating their medical waste from the SW produced within the establishment, the medical waste is usually collected by the Local Athorities as commingled with SW, which leads to serious health risks. Hence, it should be stressed that efforts must be exerted to develop the legal, organizational, and institutional frameworks

related to medical waste and to develop the technical alternatives appropriate for the collection and disposal of this waste. In this regard, it is possible to utilize the pioneering projects for treatment of infectious medical wastes conducted by the Ministry of Health in the cities of Ramallah and Gaza.

- **The need for appropriate mechanisms to collect and treat special wastes**

Common special wastes in the Palestinian Territory include construction and demolition (C&D) waste, tires, slaughterhouse waste, and scrap metal from cars. No precise statistics are available for the quantities of these wastes. The C&D waste alone, which resulted from the latest atrocities in Gaza Strip, is estimated at 1.5-2 million tons. Currently, there are no clear standards or regulations for handling special wastes in the Palestinian Territory and, thus, most of it finds its final destination in SW landfills or on remote roadsides (as is the case for C&D waste). There are also no national policies identifying best handling alternatives such as recycling options for these wastes, despite the fact that much of it is recyclable.

- **Insufficiency of legal, organizational, and institutional frameworks for handling hazardous waste**

The current status analysis show that no accurate statistics exist for the quantities or composition of hazardous waste disposed inside the Palestinian areas. The identification, handling, and monitoring of hazardous waste is hindered by the absence of both a clear Palestinian definition for these wastes and a clear standard procedures for handling them. It is further hindered by the fact that no specific national institution in the Palestinian Territory has been assigned the responsibility of handling the hazardous waste issue under the current laws.

- **The limited experience in minimizing gas emissions from landfills or recycling these gases to reduce its greenhouse impacts, thus gaining credit using the carbon trade mechanisms**

Palestinian expertise in the area of utilizing or reducing biogas produced as a result of SW operations is still limited. Methane gas, which is a greenhouse gas (GHG), is one of the gases commonly emitted from waste landfills. The Kyoto protocol, through its Clean Development Mechanism (CDM), allows developing countries to obtain tradable certificates for their GHG emission reductions. These certificates can become a source of income if sold to another country, under the CDM. Although this may be an interesting issue for Palestine, no particular Palestinian institution has been looking into utilizing the CDM within the SWM frame, as Palestine is not a Kyoto protocol signatory.

3.3 Financial issues

- **Dependence on external funding to cover SMW expenses and multiplicity of funding channels**

  Funding is a key condition to implement SWM projects, especially at the regional level. Practically, since Palestinians were not able to raise the funding needed for their SWM projects, they relied on the international donor organizations to support this sector. The current status analysis indicates a weak collection rate for SW fees at the Local Authorities level. The fees collected cover only 25-30% of the operational cost of SWM systems. Even if a 100% collection rate is achieved, up to only 70% of the cost will be covered in some areas. One of the key issues related to the role of donor agencies has to do with creating mechanisms for efficient funding coordination, synchronizing funding avenues to ensure optimal use of resources, preventing overlapping and duplicating activities, and funding allocation according to the priorities of the SWM sector. Ultimately, there is need to create a self-funding mechanism to ensure the sustainability of SWM services, especially that international funding will not last indefinitely (Appendix 2).

- **Inadequacy of current financial systems to provide needed financial data**

  It has been very hard, at the local authorities' level, to obtain reasonable figures to determine the actual costs for SWM services, which could be used to measure efficiency of resource allocations or installing future fiscal plans. This is due to the shortcomings of the financial systems used by most of these authorities. On the contrary, joint service councils, which have a limited number of tasks (mostly SWM), had a much better accountability of their SWM costs than municipalities which offered a wide range of services. Although many local authorities have taken steps recently to improve their financial systems, many still have significant gaps in these systems (Appendix 2).

- **Inability to recover SWM costs threatens service sustainability**

  Local authorities have a real dilemma in recovering the cost of their SWM services. The service costs are not well-calculated, and are usually under-estimated. The inefficient fees collection mechanisms and the lack of commitment by citizens in paying these fees are additional problems. Studies show that even if a 100% fee collection rate is achieved in some local authorities, the SWM service cost will not be fully recovered. This is because the fees were determined based on neither actual all-inclusive cost values, nor on accurate account for population and establishment sizes. On the other hand, joint service councils in Jenin and Jericho have managed to develop a collection system that led to a 100% coverage of their SWM cost. These experiences are worth learning from.

4. The National Strategy for Solid Waste Management in the Palestinian Territory

4.1 the Vision

"Integrated and sustainable management of solid waste that contributes to achieving economical and social benefits to the Palestinian people"

The developmental vision of the SWM sector in the Palestinian Territory aims at enabling Palestinians to manage the SW sector in a fashion that achieves as many economical and social benefits as possible and to ensure the optimal use of resources, in order to enhance the quality of life of the Palestinian citizens. The Palestinian government strives through this vision to maximize the opportunities to advance the SW sector within the next five years in three main areas: establishing the foundation for a modern and healthy legislative, organizational and institutional framework; minimizing the negative impact on public health and the environment; and to improve the quality and efficiency of SWM services.

4.2 Strategic objectives

The strategy has identified eight objectives, based on its vision, and in accordance with the analysis of the current status of SWM sector and the key issues that were identified.

Strategic Objective One:	An effective legal and organizational framework for SWM
Strategic Objective Two:	Strong and capable institutions
Strategic Objective Three:	Effective and environmentally-safe management of SW services
Strategic Objective Four:	Financially viable and efficient SWM services and activities
Strategic Objective Five:	Principles and mechanisms suitable for managing medical, hazardous, and special wastes
Strategic Objective Six:	Increasing the participation of the private sector
Strategic Objective Seven:	A more participating and aware community
Strategic Objective Eight:	Effective information and monitoring systems

4.3 Sectoral policies for SWM

The strategy employed a multi-fold methodology to determine the policy directions, which reflected in formulating the development policies that will bridge the gap between the current status and the desired development goals of the Palestinian SWM sector.

While some of these sixteen policies targeted finding solutions to the urgent current issues of the SWM sector, other policies were focused on setting the foundations for sustainable and integrated SWM, taking into account the time period allocated to implement the strategy and to provide opportunities to implement experimental models to enforce practices that can be built upon.

Strategic Objective One: An effective legal and organizational framework for SWM

Policy (1): Development and update of the legislative framework supporting integrated SWM

The management of SW needs an integrated and updated legislative framework that provides the legal basis for integrated SWM system that considers all stages of SW, from cradle to grave. The system should also consider community, private, and non-governmental sectors participation, the principles of "polluter pays" and "producer pays", and should modernize the penalty system. It should also determine the development frame for SWM, including planning hierarchy, and the procedures for the preparation and approval of plans, as well as the interactions among all levels of planning and implementation (national, regional, and local). The development of the legislative framework should be in line with relevant Palestinian laws and legislations and should develop the executive regulations and their enforcement mechanism, taking into account the international laws as well as the Palestinian particularity in this regard.

Policy (2): Strengthening the organizational frame of national institutions and supporting their complementary roles in SWM

This policy aims at strengthening institutional structure by defining optimal institutional arrangements for SWM, which should take into consideration the complementary relationship among all involved institutions and ensure the clarity of roles and responsibilities of each one of those institutions. Cooperative relationship among institutions should be enforced and conflicts and duplicities of roles should be eliminated. This will lead to enhanced transparency and reduced depletion of resources and scattering of efforts.

Strategic Objective Two: Strong and capable institutions

Policy (3): Establishing an integrated, coordinated, and sustainable institutional approach to support institutional capacity building in the SWM sector

This policy emphasizes the broad concept of capacity building which includes coordination and exchange of local, regional, and global expertise, documentation and dissemination of successful practices, research and development, bridging among institutions involved in this sector, partnership building, in addition to the traditional training programs. The sustainability of institutional capacity building process is a key requirement for effective and competent

management of SW. This capacity building should be based on methodological and on-going evaluation to determine the needs and priorities for building the capacity of human resources in this sector, and the needs of the various ministries for equipment needed to fulfill their duties.

Strategic Objective Three: Effective and environmentally-safe management of SW services

Policy (4): Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens

In order to develop and sustain SW collection and ransport services, best technical and organizational solutions should be selected, which consider the cost of available technology and its compatibility with the local conditions. This will lead to better SW service with wider coverage. Regional solutions, based on the "economy of scale" concept have proven successful and should be encouraged and disseminated.

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

Given the importance of the SW disposal issue in the current stage, the NSSWM has advised interim strategic solutions, executable within the time frame of the NSSWM, to ensure safe disposal of SW with minimal health and environmental risks, and to curtail the random open dumping practices. The need was identified for four regional sanitary landfills. One of these is the existing Zahrat-al-finjan landfill in Jenin area. Two landfills are planned to be constructed in Ramallah/Bireh and Hebron districts (the Rammun and Minya landfills, respectively). The fourth landfill is anticipated to be located in the Jerusalem governorate, based on detailed plans and studies. In Gaza Strip, the NSSWM identifies the need for at least one sanitary landfill, according to a special study that should be completed in the early stages of the NSSWM implementation. This landfill in Gaza is needed because the operational lives of the current sanitary landfills in the Strip are approaching their end without an alternative. Moreover, to expand the SW service coverage to include all citizens, the NSSWM advised an interim solution by expanding the current and planned landfills to serve additional areas.

The construction of sanitary landfills needs support by the national institutions and serious collaborative efforts with Local Authorities and Joint Service Councils. It also requires public awareness to promote the understanding of the need for these landfills and the acceptance of its siting. It also requires the availability of funding, including funding for landfill closure at the end of its operational life, and the construction of transfer stations and treatment units, if needed.

Policy (6): Encouraging the reduction of SW quantities destined for landfilling

The strategy considers the reduction of SW quantities an issue of strategic importance, because it helps protect our environment and reduce the amount of waste needing landfilling, which prolongs the life of landfills.

Developing and implementing waste reduction systems requires the availability of data and research studies which determine the tools of implementation. It also requires sufficient public awareness by individuals and establishments. The NSSWM has adopted a number of practical models to reduce the amounts of landfill-destined waste via recycling, especially with the participation of the private sector. It also adopted models of clean production in the industrial sector, based on incentives to encourage similar practices.

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

Closure of random dumpsites should be based on accurate data, including the numbers of these sites, their locations, and the nature of their waste. This data will help in establishing a priority list for the closure of these sites according to their health and environmental impacts. The closure and/or rehabilitation process should include clear procedures and standards to monitor the closure/rehabilitation process and the post-closure utilization of sites. It should also include a penalty system for initiators of new dumpsites.

In light of the large number of random dumpsites in the West Bank and Gaza Strip, which will require large efforts and funding allocations beyond the time scope of the NSSWM, the policy directions aim at limiting the impacts of these sites by preventing their usage, as much as possible, and their gradual phase-out. The latter should coincide with the readiness of the regional sanitary landfills in those areas to provide the appropriate alternative. The closure/rehabilitation of dumpsites requires close collaboration among local authorities and joint service councils, availability of capacity and expertise, and identifying funding mechanisms to support the closure efforts.

Policy (8): Reducing the amounts of greenhouse gases (GHG) emitted as a result of SW activities

Sustainable SWM requires the minimization of environmental impacts resulting from GHG emitted as a result of SW activities. The limited Palestinian expertise in this area required the development of policies aiming at identifying opportunities for Palestinians to take part in clean production mechanisms, according to the Kyoto Protocol, and to make available standards to support these mechanisms in some sanitary landfills.

Strategic Objective Four: Financially viable and efficient SWM services and activities

Policy (9): Reducing the cost for SW collection and transport

This policy includes attaining sound financial management, based on transparency and accountability, to reduce the costs of SW collection and transportation. These costs deplete the budgets of local authorities. To achieve that, suitable accounting systems must be applied, and scientific methodological procedures in financial planning must be followed to identify most feasible alternatives.

Policy (10): Achieving cost recovery and self-financing for SWM operating cost

The attainment of self-funding demands developing effective systems and mechanisms to increase the income of local authorities and joint service councils, which provide SWM services. This can be achieved by developing effective fee collection systems. It also needs determining the fees in accordance with true service cost, including depreciation of capital investment. It also requires developing creative fee collection mechanisms and other parallel mechanisms to raise the income. The latter includes, for example, achieving income from reusable and recyclable materials. On the other hand, better fee collection needs a higher level of citizens' awareness of the importance of paying these fees promptly and the negative consequences if the authorities are unable to recover these costs.

Strategic Objective Five: Principles and mechanisms suitable for managing medical, hazardous, and special wastes

Policy (11): Creating appropriate inventory and tracking systems for hazardous waste

In light of the absence of standards and accurate data which can be relied upon to advise solutions for hazardous waste in the Palestinian Territory, this policy sets forth the important principles which will determine how to deal with this kind of waste in the interim and on the long run. The definition of hazardous waste management systems, which include waste tracking, storage, treatment, or disposal, requires the presence of an accurate and comprehensive database to determine interim and future strategic directions, as well as the best measures to be taken.

Policy (12): Treatment of medical waste before its final disposal according to the "polluter pays" principle to limit its negative health and environmental impacts

This policy aims at employing the current Palestinian models in the treatment of infectious medical waste, by evaluating and disseminating the results of these models. Treatment of medical waste should be accomplished by making available sufficient treatment facilities that serve all medical service providers, according to the "polluter pays" principle. It also requires the establishment of standards for the collection, storage, monitoring, and safe disposal of these wastes. This also demands the availability of capacity and expertise among parties responsible for managing and monitoring this kind of waste.

Policy (13): Minimizing the negative health and environmental impacts of special waste

This policy employs some experimental models which can be replicated, if successful, in recycling certain types of special solid wastes, such as C&D waste and tires. The policy also aims at providing support for partnership between the public and private sectors. The availability of incentives to the private sector is vital in encouraging the adoption of such initiatives at large scale.

Strategic Objective Six: Increasing the participation of the private sector

Policy (14): Creating an enabling investment environment that encourages the private sector to participate

This policy is linked to policies 6 and 13, which adopted the implementation of modular solutions with economic and social feasibility to separate and recycle waste components. These solutions can be built on to expand the participation of the private sector. The expansion of this participation requires an enabling environment and an array of incentives, such as facilitating loans, tax exemptions, and other incentives to encourage the private sector to invest in SW recycling.

Imperatively, this should go hand-in-hand with fixing the SW fees collection system to enable the responsible authorities to cover the charges of the private sector should certain SWM operations be managed by this sector. It also requires building capacity at the local, regional, and national public institutes in fields such as contract preparation, preparing regulations that control the performance of the private sector, and building the private sector's own monitoring and data systems to be able to monitor this performance.

Strategic Objective Seven: A more participating and aware community

Policy (15): Promoting the partnership spirit and strengthening the alliance between service providers and the served communities to enhance the awareness of SW issues

This policy emphasizes the importance of employing current expertise to create a strategic partnership between the public sector and society. The goal is to deepen the awareness of all classes of society and to maximize their ownership of the SWM process. Awareness-raising

efforts should focus on a number of key issues, such as combating littering, increasing awareness of the impacts of hazardous waste, environmental, health and safety impacts of waste, waste minimization and recycling efforts, and the commitment to paying SW fees. Awareness programs should also include components on the relevant laws and regulations and the penalty systems for violating these laws. Finally, awareness programs should also include special programs to raise the awareness of the workers in the informal SW sector of the risks associated with disregarding health and safety rules in their activities.

Strategic Objective Eight: Effective information and monitoring systems

Policy (16): Establishing a unified national database for SW and institutionalizing monitoring systems

Identification of necessary data to establish the database should be realistic and limited to data needed for planning and monitoring and for relevant decision making in the SW sector. When designing the information and monitoring systems, the use of standard forms and coding systems should be considered, in order to facilitate usage and monitoring and for exchange of information and reporting among various administrative levels. It is also vital to develop the record system used at the sanitary landfills and to utilize, and build on, the experiences of joint service councils in handling data. It is preferred to develop computerized systems to ensure accuracy and simplicity when dealing with data and its dissemination to the general public.

Monitoring systems should adopt environmental, financial, and technical indicators, and should be linked to accurate databases to enable the measurement of goal-attainment and to quantify the efficiency of SWM systems through specific indicators. These monitoring systems should include analysis of collected data, identification of data uses, and issuing periodic reports needed for planning and decision making.

4.4 Strategic interventions

The NSSWM identified a number of strategic interventions for each of the sixteen policies determined by the strategy. Table 1 illustrates the interventions and the link between these interventions and their respective policies and strategic goals.

5. Strategy implementation, monitoring and evaluation

The NSSWM has identified the roles and responsibilities of the institutions and authorities involved in implementing the strategic interventions. These interventions were approved by all involved parties in the final workshop of preparing the NSSWM. The key executing parties, identified in table 1, are committed to executing the interventions in coordination and close collaboration with other relevant institutions and authorities.

In order to execute the NSSWM within the next five years (by the end of 2014), executive plans must be developed. The first of these plans must have a 3-year horizon, with detailed rolling up plans. These plans will identify the priorities of programs and activities, and the detailed responsibilities of the executing institution and its partners. They will also identify the execution time and the needed funding according to an appropriate funding mechanism.

Mechanism and actions for evaluation and monitoring must be determined based on the indicators set forth by the NSSWM for goals, policies, and interventions. These indicators will determine the level at which the strategy has achieved its national goals and the level of achievement at the other levels shown in table 2.

Considering the complexity of fields and issues of SWM and their overlap with many other sectors, and in light of the absence of an exclusive responsibility for SWM to any of the many national institutes and authorities involved in this sector within the Palestinian Territory, it is necessary to create an entity representing all key players in SWM. This entity (namely the National Team for the Implmentation of the Strategy) will be in charge of supervising the execution of the NSSWM, while maintaining the responsibility of each partner institution for executing their part of the NSSWM and the executive plans. The involved parties have recommended the formation of the supervising National Team in the final workshop of the NSSWM formation, and several specific responsibilities were identified for this entity. These responsibilities include making the directions and necessary actions to guarantee utilizing organized and methodological procedures for monitoring and evaluation. It also includes updating and/or modifying the NSSWM and its executive plans, if needed, in light of political, social, or economical developments in the Palestinian Territory, while maintaining effective collaboration and coordination mechanisms among all involved parties.

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
An effective legal and organizational framework for SWM	Development and update of the legislative framework supporting integrated SWM	Establish a new integrated and updated regulatory regimes for SWM	Ministry of Local Government
		Review and update of legal provisions in other laws in accordance with modern directions for SWM	Ministerial Cabinet
		Form executive instructions for aspects of SWM	Each institute as involved
	Strengthening the organizational frame of national institutions and supporting their complementary roles in SWM	Form an organizational frame clearing and defining the roles and responsibilities of national institutes involved in SWM	The supervising entity
		Review and update existing organizational structural units of relevance within involved institutions and in accordance with the general organizational frame and feeding these units with sufficient human resources	Each institute as involved
Strong and capable institutions	Establishing an integrated, coordinated, and sustainable institutional approach to support institutional capacity building in the SWM sector	Establish partnerships with local, regional, and international institutes specialized in SWM to exchange knowledge and expertise and conduct research and studies	Ministry of Local Government
		Develop continuous (annual) plans and programs to build institutional capacity and expertise.	Ministry of Local Government
Effective and environmentally-safe management of SW services	Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens	Develop a plan to expand serviced areas for collection and transport services to include all citizens.	Ministry of Local Government

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
Effective and environmentally-safe management of SW services *(Continued)*	Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens *(Continued)*	Transfer collection and transport services to Joint Service Councils (JSCs), especially where Local Authorities offer partial service coverage at a high cost	Ministry of Local Government
		Prepare a manual on development and operation plans for SW collection and transport	Ministry of Local Government
		Prepare development and operation plans for SW collection and transport by all municipalities and JSCs	Ministry of Local Government
		Develop a unified system to check and monitor effectiveness for SW collection and transport	Environmental Quality Authority & Ministry of Health
	Safe and efficient disposal of SW in regional sanitary landfills servicing all communities	Develop standards for sanitary landfills and transfer stations	Environmental Quality Authority
		Complete the establishment of Al-Minya sanitary landfill in Hebron district and expand its scope to service areas in Jerusalem Governorate until a dedicated landfill is established for the latter	Ministry of Local Government
		Complete the establishment of Rammun sanitary landfill in Ramallah governorate and expand service areas to serve parts of Salfit and Jerusalem governorates in the interim	Ministry of Local Government
		Prepare plans to establish new landfills in Jerusalem governorate and in Gaza Strip, including associated transfer stations	Ministry of Local Government
		Construct and operate at least one sanitary landfill in Gaza Strip	Ministry of Local Government
		Devise a national vision for SW disposal	Environmental Quality Authority

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
Effective and environmentally-safe management of SW services *(Continued)*	Encouraging the reduction of SW quantities destined for landfilling	Prepare a research study to identify opportunities and priorities for SW reduction and the needed implementation tools	Environmental Quality Authority
		Prepare an incentives system for organizations and projects that aim at reducing and/or recycling waste	Ministry of Economy
		Implement pioneering projects for domestic SW reduction and recycle, in collaboration with the private sector and disseminate the relevant experiences	Ministry of Local Government
		Implement pioneering projects for agricultural SW reduction and recycle, in collaboration with the private sector and disseminate the relevant experiences	Ministry of Agriculture
		Implement pioneering projects SW reduction using clean production technologies in the industrial sector and disseminate the relevant experiences	Ministry of Economy
	Prohibiting the use of random dumpsites and closing or rehabilitating the existing sites to limit their environmental and health risks	Prepare the general directives and standards for the closure and/or rehabilitation of random dumpsites	Ministry of Health
		Prepare a national program for the closure and/or rehabilitation of random dumpsites to determine the closure priorities and allocate needed funding	Ministry of Local Government
		Execute the closure and/or rehabilitation of 20 random dumpsites in the West Bank and Gaza Strip, according to the priorities of the national program	Ministry of Local Government

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
Effective and environmentally-safe management of SW services *(Continued)*	Reducing the amounts of greenhouse gases (GHG) emitted as a result of SW activities	Evaluate the opportunities for participation in Clean Development Mechanism regarding the reduction of GHG emissions from regional sanitary landfills and finding the mechanisms to utilize the relevant international agreements	Environmental Quality Authority
		Formulate standards to collect, treat, and use GHG emitted from sanitary landfills within the general standards for SW disposal	Environmental Quality Authority
		Prepare a study to evaluate the options for the reduction of methane and carbon dioxide resulting from SWM (waste-to-energy, composting, recycling)	Environmental Quality Authority
Financially viable and efficient SWM services and activities	Reducing the cost for SW collection and transport	Prepare a guide for suitable technical, administrative, and organizational options suitable to reduce the cost for SW collection and transport	Ministry of Local Government
		Delegate the collection and transport services to the joint service councils, especially in local authorities that offer this service at high cost (see second intervention of Policy 1 of the third goal)	Ministry of Local Government
	Achieving cost recovery and self-funding for SWM operating costs	Prepare a guide for the usable methods and alternatives to determine SW collection fees	Ministry of Local Government
		Develop a system that includes solutions and effective mechanisms for SW fees collection from users to cover costs	Ministry of Local Government
Principles and mechanisms suitable for managing medical, hazardous, and special wastes	Creating appropriate inventory and tracking systems for hazardous waste	Prepare and publish a list of categories of hazardous waste	Environmental Quality Authority
		Prepare and implement a system to document, track, and update the data of hazardous waste (including types, quantities, sources, and impacts)	Environmental Quality Authority
		Prepare a plan for hazardous waste management	Environmental Quality Authority
		Prepare and implement a system to track the hazardous waste, including documentation of transported material, its source, authorized transporting agency, treatment, and disposal	Environmental Quality Authority

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
Principles and mechanisms suitable for managing medical, hazardous, and special wastes *(Continued)*	Treatment of medical waste before its final disposal according to the "polluter pays" principle to limit its negative health and environmental impacts	Evaluate and disseminate the preliminary solutions for medical waste handling, based on the pioneer best practices of collection, transport, and treatment of medical waste in the cities of Ramallah and Gaza	Ministry of Health
		Update and implement the current plan for medical waste collection, treatment, and disposal	Ministry of Health
		Establish a unified systems and indicators for medical waste monitoring	Ministry of Health
		Develop a training program to elevate the capacity of institution involved in regulating and monitoring of medical waste management	Ministry of Health
	Minimizing the negative health and environmental impacts of special waste	Formulate directives and standards for the collection, transport, recycle, and treatment of construction and demolition waste	Environmental Quality Authority
		Implement pioneering projects in the field of reuse and recycle of tires and construction and demolition waste in collaboration with the private sector	Ministry of Local Government
		Document and disseminate best practices in waste recycling	Ministry of Local Government
		Take preventive measures by removing randomly-disposed special waste (C&D waste, automobile frames, etc) and dispose of it in designated locations	Ministry of Local Government
Increasing the participation of the private sector	Creating an enabling investment environment that encourages the private sector to participate	Provide incentives needed to encourage private sector to invest and participate in SWM	Ministry of Economy
		Prepare guides for private sector participation in SWM, including templates for standard contracts, participation options, and methods for regulating of performance	Ministry of Local Government
		Implement a training program for local authorities and joint service councils, covering actions for habilitation of the private sector, bids preparation and evaluation, contracts preparation and negotiation, and performance monitoring tools	Ministry of Local Government

Table 1: Strategic interventions and responsibilities of implementing parties

Strategic goals	Policies	Interventions	Key executing party
A more participating and aware community	Promoting the partnership spirit and strengthening the alliance between service providers and the served communities to enhance the awareness of SW issues	Develop and implement community awareness programs aiming at developing positive behavior of citizens and participatory approach between governmental and non-governmental institutions and stakeholders involved in SW issues (at the national/regional/local levels)	Environmental Quality Authority
		Institutionalize planning through partnership with concerned stakeholders	Ministry of Planning
		Institutionalize community awareness and participation tasks in the frameworks and plans of joint service councils and local authorities	Ministry of Local Government
		Implement joint projects with civil society institutes to familiarize the informal sector with the technical, health, and environmental aspects	Environmental Quality Authority
		Establish avenues for dialogue and participation between governmental, private, and non-governmental sectors	Each institute as involved
Effective information and monitoring systems	Establishing a unified national database for SW and institutionalizing monitoring systems	Create a data management system to identify the sources of information, systems for data collection, authentication, update and analysis, and the mechanisms for data exchange and reporting	Ministry of Local Government
		Implement an experimental project on utilizing Geographical Information System (GIS) in SWM	Ministry of Local Government
		Scrutinize and develop the monitoring mechanisms and procedures regarding the adherence of involved parties to relevant laws, regulations, and standards. This includes periodical inspection procedures and mechanisms and reporting at various levels	Each institute as involved
		Formulate indicators to monitor the environmental impacts of SW on air, surface water and groundwater, and soil	Environmental Quality Authority

Table 2:Indicators for monitoring and evaluation

Strategic objective	Strategic objective indicators	Policies	Policies indicators	Interventions	Interventions indicators
An effective legal and organizational framework for SWM	• SWM systems have an updated legal system • At least Five legislative systems are passed by the end of 2014 • National institutions fulfill their duties according to conflict- and duplication-free arrangements • 100% availability of human resources and equipment in functional units of involved institutions.	Development and update of the legislative framework supporting integrated SWM	• A new comprehensive and updated system for SWM aligned with other legislations • Number of executive systems approved • Number of conflict and duplicity cases in laws	Establish a new integrated and updated regulatory regimes for SWM Review and update of legal provisions in other laws in accordance with modern directions for SWM Form executive institutions for aspects of SWM	• An approved and implemented system • Legal provisions updated • Executive instructions approved and implemented
		Strengthening the organizational frame of national institutions and supporting their complementary roles in SWM	• An organizational frame is formed aligning and defining the roles • number of conflict and duplicity cases in institutional tasks execution • Growth rate in the numbers and capacity of human resources in specialized institutional units	Form an organizational frame clearing and defining the roles and responsibilities of national institutes involved in SWM Review and update existing functional structural units of relevance within involved institutions and in accordance with the general organizational frame and feeding these units with sufficient human resources	• Date of approving organizational frame • Number of organizational frameworks updated in accordance with the general organizational frame • Numbers and capacities of human resources is in accordance with needs
Strong and capable institutions	• Capacities are available and sufficient to fulfill SWM tasks • 80% of involved human resources in national institutions are trained in various aspects of SWM. • All equipment supplied is suitable for the needs of respective institutions to implement the strategy.	Establishing an integrated, coordinated, and sustainable institutional approach to support institutional capacity building in the SWM sector	• Availability of centers specialized in SWM capacity building • Number of cooperation achievements with local, regional, and international institutions • Number of training programs executed • Percentage of trained and qualified personnel • Level of sufficiency of equipment for the needs of concerned institutions	Establish partnerships with local, regional, and international institutes specialized in SWM to exchange knowledge and expertise and conduct research and studies Develop continuous (annual) plans and programs to build institutional capacity and expertise.	• Number of partnerships established with local, regional, and international institutes • Annual plans and programs prepared and implemented for capacity building
Effective and environmentally-safe management of SW services	• 100% of residents are covered with SW collection and transfer services • Semi-annual reports to monitor the efficiency of SW collection and transfer. • At least 4 sanitary landfills for safe SW disposal. • SW disposal service in landfills covers 100% of residents. • Availability of a long-term national vision for SW disposal All municipalities and joint service councils have plans to manage collection and transfer of SW • Exemplary solutions with economic and social feasibility for SW minimization • The amount of waste recycled in 5 years • At least 5 institutes implemented SW reduction systems using incentives • 100% of random dumpsites ceased to be used. 20 of these sites are closed and/or rehabilitated in West Bank and Gaza Strip • 50% of sanitary landfills have systems to treat emitted gases • At least one landfill uses GHG credits. • GHG reduction options are known	Developing the current management systems for SW collection and transport, in order to improve the quality and effectiveness of services and its availability to all citizens	• Percentage of SW collection and transfer services • Number of implemented collection and transfer plans • Improvement in collection frequency • Number of annual monitoring reports	Develop a plan to expand serviced areas for collection and transport services to include all citizens. Transfer collection and transport services to Joint Service Councils (JSCs), especially where Local Authorities offer partial service coverage at a high cost Prepare a manual on development and operation plans for SW collection and transport Prepare development and operation plans for SW collection and transport by all municipalities and JSCs Develop a unified system to check and monitor effectiveness for SW collection and transport	• Plan available, approved and implemented • Number of contracts signed between joint service councils and local authorities • Guide available • Plans available and implemented • Effectiveness indicators developed and disseminated
		Safe and efficient disposal of SW in regional sanitary landfills servicing all communities	• Number of sanitary landfills in West Bank and Gaza Strip • Percentage of residential areas covered in sanitary SW disposal services • Plans are available for sanitary landfills in Jerusalem district and Gaza Strip	Develop standards for sanitary landfills and transfer stations Complete the establishment of Al-Minya sanitary landfill in Hebron district and expand its scope to service areas in Jerusalem Governorate until a dedicated landfill is established for the latter Complete the establishment of Rammun sanitary landfill in Ramallah governorate and expand service areas to serve parts of Salfit and Jerusalem governorates in the interim Prepare plans to establish new landfills in Jerusalem governorate and in Gaza Strip, including associated transfer stations Construct and operate at least one sanitary landfill in Gaza Strip Devise a national vision for SW disposal	• standards for SW disposal implemented • Al-Minya sanitary landfill functional • Rammun sanitary landfill functional • Plan approved to establish landfill in Jerusalem district and funding is available • One sanitary landfill at least is operational in Gaza Strip • National vision for SW disposal approved by concerned parties
		Encouraging the reduction of SW arising at quantities destined for landfilling	• Reduction ratio of SW arriving at sanitary landfills • Number of projects conducted with private sector to reduce SW amounts • Number of projects conducted in the industrial sector utilizing clean production technologies	Prepare a research study to identify opportunities and priorities for SW reduction and the needed implementation tools Prepare an incentives system for organizations and projects that aim at reducing and/or recycling waste Implement pioneering projects for domestic SW reduction and recycle, in collaboration with the private sector and disseminate the relevant experiences Implement pioneering projects for agricultural SW reduction and recycle, in collaboration with the private sector and disseminate the relevant experiences Implement pioneering projects SW reduction using clean production technologies in the industrial sector and disseminate the relevant experiences	• Study prepared • incentives system prepared • Projects implemented with the private sector • Projects implemented with the private sector • Projects implemented with the industrial sector using clean production technologies
		Prohibiting the use of random dumpsites and closing or rehabilitating the existing sites to limit their environmental and health risks	• Number of random dumpsites in use • Number of random dumpsites closed and/or rehabilitated	Prepare the general directives and standards for the closure and/or rehabilitation of random dumpsites Prepare a national program for the closure and/or rehabilitation of random dumpsites to determine the closure priorities and allocate needed funding Execute the closure and/or rehabilitation of 20 random dumpsites in the West Bank and Gaza Strip, according to the priorities of the national program	• Standards for the closure and/or rehabilitation of random dumpsites are published and applied • Priorities of closure and/or rehabilitation are determined and programmed • 20 random dumpsites are closed and/or rehabilitated
		Reducing the amounts of green house gases (GHG) emitted as a result of SW activities	• Number of landfills that adopted GHG reduction solutions • Number of landfills that utilized carbon reduction credits • A study is available on GHG reduction	Evaluate the opportunities for participation in Clean Development Mechanism regarding the reduction of GHG emissions from regional sanitary landfills and finding the mechanisms to utilize the relevant international agreements Formulate standards to collect, treat, and use GHG-emitted from sanitary landfills within the general standards for SW disposal Prepare a study to evaluate the options for the reduction of methane and carbon dioxide resulting from SWM (waste-to-energy, composting, recycling)	• Mechanisms are available for participation in Clean Development Mechanism and international agreements • Standards are available, published and implemented • Research study prepared and policies approved
Financially viable and efficient SWM services and activities	• 80% of municipalities have accurate estimates for SW collection and transfer costs • 100% of joint service councils have accurate estimates for SW services costs • The cost of SW collection and transfer is reduced by 20% in 70% of municipalities • Operating cost of sanitary landfills is 100% covered	Reducing the cost of collection and transport	• Percentage of municipalities that used the unified financial system and made available comprehensive financial data • Percentage of municipalities that achieved 20% reduction in SW collection and transfer costs	Prepare a guide for suitable technical, administrative, and organizational options suitable to reduce the cost for SW collection and transport. Delegate the collection and transport services to the joint service councils, especially in local authorities that offer this service at high cost (see second intervention of Policy 1 of the third goal)	• Guide is published and used by relevant bodies • Number of contracts signed between local authorities and joint service councils
		Achieving cost recovery and self-funding for SWM operating costs	• Percentage of municipalities that achieved 20% reduction in SW collection and transfer costs • Number of joint service councils that achieved 100% coverage of SW disposal	Prepare a guide for the usable methods and alternatives to determine SW collection fees Develop a system that includes solutions and effective mechanisms for SW fees collection from users to cover costs	• Guide is published and used • SW fees collection system developed and implemented
Principles and mechanisms suitable for managing medical, hazardous, and special wastes	• Interim solutions and system vision are available for hazardous wastes, based on studies and databases • 80% of healthcares centers use facilities for medical waste treatment • 80% of accumulated special waste in urban areas are removed • Waste ready for final disposal is reduced by 15% Practical solutions are available for special waste recycle based on pioneering projects	Creating appropriate inventory and tracking systems for hazardous waste	• Unified database is available and in use for hazardous waste Interim solutions adapted to reduce the impact of hazardous waste	Prepare and publish a list of categories of hazardous waste Prepare and implement a system to document, track, and update the data of hazardous waste (including types, quantities, sources, and impacts) Prepare a plan for hazardous waste management Prepare and implement a system to track the hazardous waste, including documentation of transported material, its source, authorization, transporting agency, treatment, and disposal	• Types and categories of hazardous waste are known and determined • System available and implemented • Approved plan for hazardous waste handling • Registry is available with tracking information for hazardous waste
		Treatment of medical waste before its final disposal according to the «polluter pays» principle to limit its negative health and environmental impacts	• Number of medical waste treatment facilities available and used • Percentage of medical waste treated before final disposal • Number of monitoring reports	Develop and disseminate the preliminary solutions for medical waste handling based on the pioneer best practices of collection, treatment, and treatment of medical waste in the cities of Ramallah and Gaza Update and implement the current plan for medical waste collection, treatment, and disposal Establish a unified systems and indicators for medical waste monitoring Develop a training program to elevate the capacity of institution involved in regulating and monitoring of medical waste management	• Preliminary solutions for medical waste treatment are approved, updated, and disseminated • Updated plan • Quarterly monitoring reports • Implemented training program
		Minimizing the negative health and environmental impacts of special waste	• Percentage of special waste reduction • Number of implemented projects for the reuse and recycle of C&D and tire waste • Percentage of special waste removed from both within and outside residential areas	Formulate directives and standards for the collection, transport, recycle, and treatment of construction and demolition waste Implement pioneering projects in the field of reuse and recycle of tires and construction and demolition waste in collaboration with the private sector Document and disseminate best practices in waste recycling Take preventive measures by removing randomly-disposed special waste (C&D waste, automobile frames, etc) and dispose of it in designated locations	• Approved and implemented standards • Implemented projects in collaboration with the private sector • Best practices are documented and disseminated • Accumulated randomly-disposed special wastes are removed
Increasing the participation of the private sector	• At least 6 separation and recycle pioneering projects are implemented • Published and disseminated documents on economically- and socially-feasible SW reduction/ recycle solutions • The number of projects which utilized the incentives system • The reduction ratio in recyclable SW quantities	Creating an enabling investment environment that encourages the private sector to participate	• Number of projects implemented by the private sector for the recycle of SW • Number of contracts signed between the private sector and concerned authorities	Provide incentives needed to encourage private sector to invest and participate in SWM Prepare guides for private sector participation in SWM, including templates for standard contracts, participation options, and methods for regulating of performance Implement a training program for local authorities and joint service councils, covering actions for habilitation of the private sector, bids preparation and evaluation, contracts preparation and negotiation, and performance monitoring tools	• Incentives available • Guides are published • Implemented training program
A more participating and aware community	• Complaints are reduced by 70% • Violations are reduced by 80% • All community sectors have participated in awareness programs • At least 3 joint projects executed with civil society institutes to elevate the awareness of the informal sector	Promoting the partnership spirit and strengthening the alliance between service providers and the served communities to enhance the awareness of SW issues	• Number of joint projects executed with civil society institutes to enhance awareness • Number of people who enrolled in awareness projects • Percentage of local authorities' and JSC budgets that included programs to elevate awareness • Number of department/ jobs created within local authorities and joint service councils to promote community awareness	Develop and implement community awareness programs aiming at developing positive behavior of citizens and participatory approach between governmental and non-governmental institutions and stakeholders involved in SW issues (at the national/regional/local levels) Institutionalize planning through partnership with concerned stakeholders Institutionalize community awareness and participation tanks in the frameworks and plans of joint service councils and local authorities Implement joint projects with civil society institutes to familiarize the informal sector with the technical, health, and environmental aspects Establish avenues for dialogue and participation between governmental, private, and non-governmental sectors	• Implemented awareness program at all levels • Developed and implemented mechanisms to institutionalize planning through partnership • mechanisms and measures are published to institutionalize community awareness • Implemented projects • Conducted dialogue including all sectors
Effective information and monitoring systems	• 100% of municipalities and joint service councils made available accurate information on SW • SW database is available and is used in planning and monitoring • Reduction in environmental offenses • In-depth study based on annual environmental audits provide input for relevant decisions	Establishing a unified national database for SW and institutionalizing monitoring systems	• Percent of concerned entities who made accurate data available for the database • Percent of concerned entities who utilized the database in planning and monitoring • Number of local authorities and JSCs who applied GIS in SWM • Number of environmental monitoring reports issued • Number of violations of laws and standards • Number of in-depth studies based on annual environmental audits	Create a data management system to identify the sources of information, systems for data collection, authentication, update and analysis, and the mechanisms for data exchange and reporting Implement an experimental project on utilizing Geographical Information System (GIS) in SWM Scrutinize and develop the monitoring mechanisms and procedures regarding the adherence of involved parties to relevant laws, regulations, and standards. This includes periodical inspection procedures and mechanisms and reporting at various levels Formulate indicators to monitor the environmental impacts of SW on air, surface water and groundwater, and soil	• Prepared and implemented system • Implemented experimental project • Monitoring mechanisms and procedures are available, coordinated and disseminated • Environmental monitoring indicators are available and implemented