

Challenges of Solid Waste Management in the City of Nablus

A Special Case Study

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1. Introduction

Waste is a serious dilemma for environment and health in Palestine. Consistently garbage is not collected or disposed properly. Solid waste is left on the streets uncollected, randomly dumped, and sometimes burned. All these practices severely harm Palestinian environment and health in many ways. Waste left on the streets create unpleasant odors and is breeding ground for vermin and insects causing illnesses; hazardous materials from randomly and incorrectly dumped waste can seep into and pollute water resources, including groundwater -main drinking-water source in Palestine. Polluted earth and water reach the human body, via drinking water, vegetables, and animal products, while burning solid waste pollutes the air, causing serious health risks, including respiratory infections, cancer, and other illnesses.

Also, solid waste generation is growing rapidly, an estimated 4.0% growth per year, promising a future of increased costs, along with greater human health and environmental impacts. The total daily tonnage of household-produced solid waste in the West Bank is 1,728.2 tons (PCBS, 2006). As for waste composition it varies; 67% is organic waste, paper/paperboard and plastic comprise up to 19% and 17% respectively, while other materials comprise small fractions of the waste stream (Doug and AL-Khateeb). Composting and recycling are not undertaken in a formal sense. Recycling by the informal sector occurs, but its impact on the waste stream has not been quantified.

Waste collection systems have left large areas (estimated to be 27.8%) of towns and villages without coverage. The majority of solid waste (99%) is managed through land disposal, 30% in landfills and 69% in open dumps. Open dumps have proliferated in recent years as a result of restrictions on access to established waste disposal sites; at least 450 illegal dumps have been established in the West Bank, even as municipalities were taking steps to rehabilitate established dumps (Doug and AL-Khateeb).

Dumping solid waste in open, unmonitored sites throughout Palestine is the method of waste management for the majority of localities. In 2005, one survey conducted by the PCBS counted 161 waste dumping

sites in the West Bank and 3 in the Gaza Strip, none of which were subject to any monitoring or control by the Palestinian Ministry of Health or other authorities (PCBS, 2006).

The extent of open dumping practices is closely linked to availability of collection services. In 2005, 166 localities within the West Bank, or 27.8% of the total number of localities, did not have any solid waste collection services at all (PCBS, 2005). In 78.5% of the localities where a collection service was available, the local authority had jurisdiction over solid waste management. An additional 4.6% of localities had waste collection regimes originating from the private sector, and the rest used alternative regimes such as "Joint Councils for Services, Planning and Development" (PCBS, 2005).

Traditionally, solid waste management, collection and disposal, is handled on the municipality level. In the absence of environmental legal frameworks, the sector operates solely under municipal law that defines municipal responsibility for waste management services and which provides for municipalities to establish " Joint Councils for Services, Planning and Development " through which they may collaborate in the delivery of municipal services, including waste management; an increasing number of municipalities are participating in such initiatives. (ARIJ CH8)

This case study shall highlight the work of waste management unit of Joint Council for Services in the Palestinian City of Nablus, for the purpose of identifying major challenges and suggesting possible solutions. The data and arguments were presented by the people of Nablus as well as the Municipality officials, during a special workshop that was organized by Applied Research Institute-Jerusalem as part of *Pro-Poor Integrity Program* implemented by TIRI and funded by UK Department for International Development (DFID). The workshop was held in Nablus during August 2009 and it was attended by thirty five people representing the Municipality, An-Najah National University and other civil society organizations and of course the people of city including women and young people. Additionally, special data about the management of solid waste was provided by Municipality officials. Therefore, special thanks go to Dr. Azzam Halawa and Engineer Majdi Jaber from Nablus Joint Council for Services who not only gave out

information but presented an analytical description of the current challenges facing waste management function in Nablus.

2. Nablus City

Nablus is a Palestinian city in the northern West Bank, approximately 63 kilometers north of Jerusalem, with a population of 134,000. Located in a strategic position between Mount Ebal and Mount Gerizim, it is the capital of Nablus Governorate and a Palestinian commercial and cultural center.



Founded in 1869, Nablus Municipality is currently considered one of the largest organizations in Palestine in terms of volume of services it provides, the projects it carries out, and the number of local staff it employs. Nablus Municipality is one of the major employers in Palestine and it is the main driving force behind development process of the Nablus city. The major departments of the Municipality are: Administration, Engineering, Electricity, Water and Sanitation, Finance, Public Health and Environment, Solid Waste Water Management, Mechanics, Municipal Court, Slaughter House, Central Vegetable Market, Fire Brigade, Customer Service Complaints Section, and finally the vehicles' department (Nablus Municipality).

Among major accomplishments of Nablus Municipality are the establishment of cultural centers, public parks, the preservation of Nablus cultural and historic heritage project namely; remodeling of old city, and the commercial center which is considered one of the economic and architectural land marks of Nablus city, in addition to digging water wells to meet not only the need of Nablus citizens, but the neighboring towns and villages as well (Nablus Municipality).

The Health & Environment Division was founded in 1868 and regarded as momentous due to its relevance to the public health conditions in the city and its direct impact on the quality of life of the citizens. It encompasses four main sections each carries out different duties and

responsibilities managed and administered by a total number of 248 staff members. This Division encompasses solid waste management unit collecting, transporting and disposing the solid waste from all parts of the city. The Division executed several vital projects namely; Cooperative Waster Disposal Containers. The budget for disposal of waste generated by 140,000 people in Nablus is NIS 3 million (\$US 675,000) (Nablus Municipality).

3. A Preview Solid Waste Management System in Nablus

Nablus Municipality undertakes the responsibility of solid waste management process which starts from garbage collection, and then transferring the garbage to the only transfer station in Nablus which is referred to by 'Al-Serafi Transfer Station'. And as the majority of collected waste in Palestine is managed through land disposal or



Al-Serafi Transfer Station

dumps, in Nablus the garbage is transferred from 'Al-Serafi Transfer Station' to 'Zahert Alfinjan Dumping Site' which is located in Jenin Governorate 27 km away from Nablus.

In relation to the scope of work, the Municipality provides its garbage

collection to the entire city with a total area of 70km²; this area includes the old city which requires extra work as shall be explained later. And as known, there are three refugee camps in Nablus; namely Balata Refugee Camp, Asker Refugee Camp, and Al-Ayn Refugee Camp. In these camps, garbage collection services is carried out by the UNRWA (United Nations Relief and Works Agency for Palestine Refugees in the Near East), the transfer and dumping of solid waste, on the other hand; is undertaken by the Municipality.

Furthermore, Nablus Municipality provides special garbage transfer services to 6 hospitals; two governmental and four private ones. Accordingly, to protect citizens from hazardous waste, hospitals garbage is transferred directly to 'Zahert Alfinjan Dumping Site' in Jenin. Naturally, this service is provided to governmental hospitals for free, where as private hospitals are charged 30JD for each container.

The same transfer service is provided to Nablus slaughter house for free.

Concerning the quality of service provided, Nablus Municipality has begun to work on plans to tackle the waste problem. These plans include improving waste collection to make Palestinian streets cleaner and setting up a system to manage waste disposal in a way that is cost efficient as well as environmentally safe. In the area of waste recycling, the waste management department at Nablus Municipality is undertaking some sorting of garbage attempts. Thus, on a small scale the garbage at 'Al-Serafi Transfer Station' is classified into: plastic, iron, and paper. Paper material is sold for Israeli industries and Nablus factories are buying the plastic and the iron.

As for garbage collection, Nablus Municipality provides efficient waste collection services in comparison with other Palestinian Municipalities, as trash is collected on daily basis rather than twice or three times a week. According to Municipality officials, and a number of the City' citizens, who were interviewed, garbage is collected as follows:

Table 1: Garbage Collection Frequency in Nablus City

| No. | Type | Frequency of Garbage Collection |
|-----|---------------------|---------------------------------|
| 1. | The Main City | Daily Basis |
| 2. | The Old City | Twice a Day |
| 3. | Nablus Trade Center | Twice a Day |
| 4. | The Suburbs | Twice a Week |

Since garbage is collected twice a week in the suburbs, the Municipality provides big containers in these places instead of the regular size placed in the areas of the Main City.

To run daily collection of garbage, the garbage collection service is managed by an efficient employment of machineries and workers who are working on different shifts day and night to satisfy the needs of all citizens ; the following schedule reflect the rotations:

Table 2: Garbage Equipment Schedule in Nablus Municipality

| No. | Type | Available Number | Time Working | |
|-----|------------|------------------|--------------|------|
| | | | AM | PM |
| 1. | Compactors | 7 | 4-9 | 6-11 |
| 2. | Trucks | 4 | 6-12 | 5-9 |
| 3. | Trailers | 1 | ---- | 5-7 |
| 5. | Pickups | 2 | 6-9 | 4-7 |

And in order to enhance its responsiveness to citizens needs, Nablus Municipality applies a Geographical Information System (GIS) for the purpose of monitoring the service of garbage collection. In addition to distributing garbage containers according to people's needs, the GIS system also helps specialized engineers track the route of garbage trucks locating their exact place. Therefore, if citizens call to complain about their trash not being collected, Municipality engineers could take immediate action to respond to such complains. The following graph represents GIS map for the city of Nablus showing the exact locations for all trash containers:

Figure 1: GIS Map of Trash Containers in Nablus City



It is worth mentioning that in the area of responding to citizens needs Nablus Municipality employs a Customers' Service Center which is considered among pioneer initiatives at the national level. The purpose

of the center is to enhance the level of service rendered to the citizens through improving the relation between the Municipality and the local citizens. Such methodology also saves time and effort to both citizens and the Municipal staff at a time because it functions through exclusive software which has been created and developed especially for Nablus Municipality.

In spite of its strengths; Nablus Municipality still faces major challenges that hinders the provision of best quality service to its public; these challenges are highlighted as follows:

4. Challenges of Solid Waste Management System in Nablus

4.1 The Israeli Occupation Damage of Machinery and Equipment

Since Al-Aqsa Intifada, and due to the Israeli activities, curfews, closures, and military checkpoints, solid waste management services delivered by Nablus city has been badly affected, negatively affecting health and damaging the environment. Some of the important municipal solid waste equipment had been damaged during the Intifada. The workforce in the Health & Environment Division was reduced and certain related development projects and activities have been frozen. The city's medical waste incinerator had been phased out and the number of special medical containers had been reduced from 16 to 10. Some solid waste compressing trucks had been out of use with no substitute. Another important figure is the number of waste collection workers which decreased from 248 to 420, although the city is growing in premises as well as population (Hassan Al-Khatib and Zahra).

4.2 Nablus Special Urban & Geographical Features



Nablus stands at an elevation of around 550 meters above sea level, in a narrow valley running roughly east-west between two mountains: Mount Ebal, the northern mountain, is the taller peak at

940 meters, while Mount Gerzim, the southern mountain, is 881 meters high. As a result Nablus city has many steep roads, which creates a special difficulty in choosing appropriate locations for placing garbage containers. In this regard, placing a garbage container at the edge of steep road could cause result into its fall causing major car accidents. In any case Nablus Municipality is aware of this issue and it tries its best to accommodate the needs of the citizens by placing containers in the nearest possible locations.

In addition to its special geographical features, in the center of Nablus lies its old city, it is composed of six major quarters, and it is a densely populated area. As expected, the old city

requires special cleaning and waste collection service from the municipality part. This special effort involves placing

small size containers in addition to emptying all trash containers twice a day rather than once a day as it is case in most parts of Nablus.

Nablus also encompasses a central vegetable market located to the east part of Nablus which is regarded as vegetable and fruit basket for Nablus city and the surrounding towns and villages. The Central Market is being managed and operated by a total number of 46 staff members and workers, as wholesalers and retailers can make use of the large size fridges provides by the municipality against certain fees

4.3 Low Tax Collection Rates

Nablus city produces about 200 ton of garbage daily, for proper disposal and dumping each ton of waste costs Nablus Municipality 75 NIS. This cost involves transfer of waste from the trash containers in Nablus streets to 'Al Serafi Transfer Station' and then to 'Zaheret Alfinjan Dumping Site' in Jenin area, where the trash will be finally buried. The following shows a breakdown of the cost per ton of garbage:

Table 3: Cost of Solid Waste Disposal per Ton of Garbage

| From | To | Cost Item | Cost |
|---------------------------------|---------------------------------|----------------|--------|
| Nablus Streets | 'Al-Serafi Transfer Station' | Transportation | 15 NIS |
| 'Al-Serafi Transfer Station' | 'Zaheret Alfinjan Dumping Site' | Transportation | 30 NIS |
| 'Zaheret Alfinjan Dumping Site' | | Dumping Fees | 30 NIS |
| Total Cost | | | 75 NIS |

Accordingly, the management of solid waste cost the Municipality 15,000 NIS per day or 5.4 million NIS on a yearly basis. To cover part of the cost Nablus Municipality charges each household in Nablus a sum of 12 JD (65 NIS). Consequently, in theory the Municipality should be collecting enough revenue to cover 40% of the garbage management cost, so even with enhanced financial management capacity at the municipal level there are insufficient funds available for efficient and effective solid waste management services. Unfortunately, only 50% of Nablus citizens pay garbage fee to the Municipality, which means that the collected revenue covers only 20% of the incurred cost.

Thus, Nablus Municipality, -as it is the case in many other municipalities in the Palestinian Territories- suffers from financial burden related to un-paid public debts.

This element reflects the first ethical challenge that should be overcome in order to enhance the performance of Palestinian public authorities towards better services offered to their citizens. Nonetheless, dealing with this challenge requires not only building the collection capacities of local authorities, but also the enforcement of laws and legislation, as well as, working on strengthening the sense of belonging and loyalty of Palestinian citizens towards their own local authorities.

4.4 Inadequate Facilities and Equipment

In face of critical financing deficiencies, the international community has provided major equipment and facilities. In Nablus, all new infrastructure and major equipment has been financed through either grant assistance or occasional financing from donor countries, or financial institutions; the European Commission being the main institution. Although this aid has made important contributions to the waste management unit at Nablus Municipality, still the unit lacks a number of facilities and equipment including different types of containers with different sizes, colors and function. Also, most available machineries are old and obsolete. The following schedule reflects the current shortage in equipment and machineries according to the Health and Environment Unit of the Joint Service Council of Nablus:

Table 4: Needed Garbage Collection Equipment and Machineries in Nablus Municipality

| No. | Type | Available Number | Additional Number Needed |
|-----|-------------------------------------|------------------|--|
| 1. | 1- Cube containers (1 cube) | 1500 | need to upgraded by 4- cube containers |
| 2. | Roll-off containers (domestic wear) | 180 | 0 |
| 2. | Compactors | 7 | 7 |
| 3. | Trucks | 4 | 5 |
| 4. | Trailers | 1 | 2 |
| 5. | Pickups | 2 | 2 |

4.5 Public Awareness and Participation

When it comes to environmental problems in general and solid waste management practices in particular, the ongoing challenge in our Palestinian community as a whole remains to be the lack of awareness and public ignorance resulting in negative behaviors concerning the collection and disposal of waste. Behaviors such as carelessly throwing the garbage in the public street or in a near unused grasslands, disposing of waste right next to the provided waste container instead of inside it, disposing loose waste in the waste container instead of disposing it in a tightly closed bag, physically moving the waste container to another location, and burning generated waste either inside the waste container or out in the open.



Generated waste is carelessly thrown away from citizens as well as factories, businesses and hospitals. In Nablus both the officials of Nablus Municipality and the citizens themselves agreed that the most important obstacle facing their city regarding the management of solid waste is how to change the behaviors of the citizens who are incorrectly disposing of garbage. They complained that this practice has been a way of living for a very long time that many citizens do not really see as a “problem” and that is a problem in itself.

Nablus Municipality tried to deal with this negative behavior by placing waste baskets in the streets of Nablus along side garbage containers, which are not suitable for throwing a can of drink for example. Thus, the municipality provided 60 trash cans especially in the Parks’ area where a summer festival was taking place last year, the total of the 60 trash cans disappeared within few months. This behavior leads us to other related practices which involve the stealing, destruction and burning of public properties by some people, including trash containers and cans.

Also burning the trash in its container or even separately, is still a common practice for some people in Palestine. In addition to the negative environmental impact, this means that the municipalities have to incur additional cost for replacing containers in many occasions. Concerning the use garbage containers in Nablus, the Municipality officials and the people of Nablus identified some abuses which are mainly, throwing garbage bags next to the container rather than inside it, moving containers from one house to the other due to the garbage spread around it, in addition to deliberate destruction of these containers by young people.

Other identified violations were from hospitals, as mentioned earlier Nablus Municipality charges each private hospitals 30JD in return for the transfer of each garbage containers from the hospital yard to 'Zahret Al-Finjan Dumping Site' in Jenin Governorate. To save the frequency of collection and thus the cost, private hospitals very often accumulate their medical garbage in the streets instead of calling the Municipality workers to empty the containers. The Municipality officials explained how one of the hospitals has already received four written warnings in this regard and the Municipality hopes to take legal actions against this hospital if such violation continues. Of course, medical waste contains hazardous and infectious substances including microbes, viruses, and contaminated chemical materials, thus the proper disposal of medical waste is of great importance.

Another area of concern is construction sites. It is a common practice for builders to leave debris at the construction site for infinite periods of time. Collecting it and properly disposing it is a rare event.

On top of all this Public awareness of solid waste management issues is largely defined in terms of the removal of waste from neighborhoods. Issues of where solid waste is disposed, how to manage it, how best to allocate resources, the implications of poor solid waste management, and other related issues are not discussed in a public context and the public is generally not aware or interested in such issues.

Recycling and segregating waste is going to be a hard step to achieve with citizens still disposing waste in improper ways and means. It is going to be difficult to ask citizens not only to dispose waste rightly but also to segregate it before disposing it in several waste containers.

Public Participation is important because any successful waste management initiative has to be endorsed and adopted by the citizens. In any thriving project, generators of waste have to take the responsibility upon themselves to initiate and begin the waste management process starting by simple acts as not trashing the streets, disposing of trash in waste containers, to taking part in the recycling process by segregated waste at the point of generation.

4.6 Lack of Municipally Communication Capacities

In spite of all the mentioned strengths, Nablus Municipality Health Department has its own shortcomings. Though the department has 220 employees, the lack of a solid recruitment policy allows for the employment of unqualified workers and thus not putting the right person in the right place. This is actually a common problem in Palestine; as the unemployment rate is high and the social bonds are strong recruitment is often based on social rather than professional considerations.

Another factor related to personnel capability, is the lack of qualification on the “mid-level”. Nablus Health Department employs specialized and qualified engineers, and it also has a good number of cleaning workers, but it is missing coordination, communication, as well as, organizing skills. Accordingly, the municipality needs qualified workers to manage daily tasks related to garbage collection such as distributing tasks between workers or preparing a vehicles’ schedule. The same capability factor affects the responsiveness of the municipality to the needs of the people, where neither cleaning workers nor engineers are currently communicating with the public regarding their needs.

This middle level of employees could also enhance the responsiveness of the Municipality, through dealing with citizens face to face and reporting their needs to the officials. In addition, the lack of qualification is related to monitoring capability; where Municipality workers should report offences by people, factories and hospitals. According to Nablus Municipality officials, the current workers are not only unqualified, but are also scared of taking the responsibility of reporting negative practices, their attitude is: “Why enter into trouble with fellow citizens or relatives?”

Accordingly, the Municipality staff lack the technical capacities that enables them to create a link between the people and the Municipality. This lack of communication not only affects the level of service delivery but it also prevents the Municipality from going out to people regarding the challenges of solid waste management. So far Nablus Municipality has not launched any awareness campaign to share with the citizens its vision on the issue of garbage collection or recycling, or to help the citizens acknowledge their responsibilities towards their city in general and waste management in particular. Therefore, Municipality officials complain about the negative behavior of the public, the lack of awareness and the sense of belonging however, but they do not make any attempts to go out to the people, and it is the case in other Palestinian Local Authorities, public awareness is left to civil society and international organizations.

4.7 The Absence of an Effective Waste Management Legal Framework

The Palestinian Environmental Law No. 7 of 1999 provides a framework to address environmental issues associated with solid waste management. In this legal framework, solid waste management is defined as a municipal operational responsibility under a national environmental management framework. However, an absence of overall solid waste management policy creates a situation where there are no national objectives regarding the sector.

The Environmental Quality Authority (EQA) is responsible for implementation of the law at the national level; the EQA was established in 2000 and reports to the Chairman of the Palestinian Authority. The Environment Law No. 7 of 1999 provides the EQA with important authorities which, if implemented, could correct many of the deficiencies associated with the existing waste management system.

Nonetheless, the Environment Law lacks the provision of rules or penalties regarding littering the streets or any form of offensive waste disposal behavior from the citizens or organizations. Additionally, the law does not hold citizens responsible for the cleaning of their own surroundings, their yard and gardens, as well as roads or streets in their immediate premises. Most importantly, the current law does not clearly state that garbage must be placed in the proper containers for the disposition. Accordingly, within the current legal framework any

person who litters or throws garbage, in public places or roads, is not penalized.

4.8 Lack of Planning at National Level

The management of solid waste in Nablus must not be analyzed separately from the overall Palestinian context; following the adoption of the Environment Law No.7 of 1999, an environmental strategy was proposed by the Environmental Quality Authority. The strategy acknowledged the following priorities for solid waste management:

- Setting up non-hazardous domestic and industrial waste collection and transport system, enabling 100% collection coverage.
- Construction of sanitary landfills.
- Prevention of open air burning.
- Setting up an effective management system.
- Development of a cost recovery system.
- Closure of existing random sites.
- A separate system for hazardous waste.
- Removal of littered waste throughout urban and rural areas.

Unfortunately, this strategy was not adopted by the Legislative Council or the Chairman of the Palestinian Authority. Consequently, an absence of overall solid waste management policy creates a situation where there are no national objectives regarding the sector, and solid waste management investment remains to be depended on the international donor community.

As the fiscal health of the Palestinian National Authority fluctuates with the uncertainty of transferred tax revenues and international aid, and as the situation in the West Bank and the Gaza Strip varies, the progress of Palestinian efforts on the municipal and national levels to improve collection and disposal of solid waste is thrust into jeopardy. Still, many challenges face Palestinian authorities, in terms of improving waste management; rapid population growth and increased solid waste production, and Israeli restrictions of movement of Palestinians, which prevent extension of services to any region, and Israeli military disrupting of civil services.

The current regime of largely uncontrolled dumping is inexpensive, uncomplicated, and does not require a large investment in infrastructure. Moreover, it is a relatively a decentralized process that

does not require an individual to wait for, or rely upon, centralized collection and disposal services.

Thus, recycling and composting have not been implemented to any significant degree at the national level, despite their potential for reducing volume, and conserving natural resources and saving energy used in manufacturing new goods.

5. Recommendations

- Establish community committees that shall facilitate communication between the Municipality and the public, and work on strengthening the participation of the public in solid waste management challenges.
- Hold regular public hearings with the people of Nablus to discuss issues related to public service delivery, including garbage collection, disposal and recycling.
- Promote public education program, correct attitude and social values reinforcement in keeping public cleanliness and proper waste disposal management for all children and citizens in the society.
- Encourage partnerships between the private, governmental, and civil society organizations for the purpose of establishing recycling ventures that will use garbage of 'Al-Serfai Transfer Station for Recycling'.
- Provide funding incentive, technical assistance and various facilities to private investors or non-government organizations involved in solving solid waste management problem.
- Initiate education and training program in fostering technical and administrative capabilities to concerned local government and private personnel in the area of solid waste management.
- Encourage waste separation and recycling program at sources such as at homes, businesses, institutions and factories by employing segregation strategy that matched to the appropriate and effective waste collection and disposal practices.

- Amend laws, regulations, relating to littering, throwing garbage in the streets or destroying garbage containers.
- Improve the Municipality overall tax collection efficiency, through improving technical capacities and communication skills with the public.
- Establish partnership with the public, private and civil society organizations for the purpose of initiating different recycling industries. The following section highlight some of the major recycling opportunities in Nablus:

5.1 Nablus Recycling Potential

While recycling operations has not been institutionalized on a national level, there exists some capacity in Nablus for recycling of old cars and as some car wrecks were already recycled in Nablus (UNEP, 2003). The success of these programs depend upon the willingness of consumers to participate and, more importantly, upon the initiative of the



companies to arrange for pickup of items and set up channels for reimbursement of suppliers.

Another possibility of recycling in Nablus is using the garbage of 'Al-Serafi Transfer Station' for making compost.

Recycling Unit of Nablus Municipality

It is worth mentioning here that Nablus transfer station is located in 'Area A' which is under control of the Palestinian Authority. As mentioned earlier some sorting of garbage activities are already taking place by Nablus Municipality; metals and glass are handled and some fractions are sold in Israel. Moreover, the municipality operates a small compactor, if the operational experience from the use of a specialized solid waste compactor in Nablus is positive, such compactors should be introduced elsewhere, at least at the other large sites. These compactors can achieve a density in the landfill that may be 25-50 % higher than with conventional vehicles, and this may be crucial given

the availability and costs of land within the Occupied Palestinian Territories (UNEP, 2003.)

Local ability to finance solid waste management initiatives is not as limited as it seems. However, an absence of adequate planning, technology specification and institutional coordination resulted in missing many great opportunities to improve the waste management sector. Firstly, the private sector participates in the waste management sector as a service provider to municipalities and to industrial waste generators; it does not participate in financing waste management infrastructure. Secondly, previous attempts of making compost have failed because they were NGO-based pilot composting project with no participation from the people themselves or the governmental or civil society sectors. Thirdly, previous obstacles in regards to compost in particular, were presented by the unwillingness of residents on the individual and community level to allow composting plants to be built near them. However, if the making of compost or any other recycling related industry is to succeed; efforts of all sectors have to be merged. Achieving any real progress in this direction requires the political will of the Palestinian decision makers at the local level, who could motivate people to participate by embracing recycling initiatives and even by the segregation of waste at source. The private sector can participate by financing waste management infrastructure, and of the civil society is to continue on providing technical skills and awareness to the local community. In summary recycling opportunities do exist in Palestine and in Nablus in particular, but these opportunities can only be ceased by establishing solid partnerships between the public, private and civil society organizations.

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