

**The Jerusalem Policy Forum**

**A joint project of  
The Peace and Democracy Forum and Ir Amin**

**From Dissonance to a Permanent Status Destination  
Creating Policy Options to Pave the Way to Final Status**

***Solid Waste Management Policy in the  
Jerusalem District***

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Solid Waste Management Policy in the Jerusalem District**

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The Peace and Democracy Forum and Ir Amim

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## ***The Jerusalem Policy Forum***

Jerusalem is a city of vital importance to Palestinians and Israelis, as well as to three world religions: Christianity, Islam and Judaism. Jerusalem is destined to play a pivotal role in any future political agreement between the Israelis and the Palestinians.

The Jerusalem Policy Forum is a joint project of the Peace and Democracy Forum, a Palestinian NGO, and Ir Amim, an Israeli NGO. The Jerusalem Policy Forum acts on the assumption that the optimal resolution of the conflict between Israelis and Palestinians lies in a viable two-state solution, in which Jerusalem will serve as the capitals of both states. Therefore, the Forum is committed to thwart any action that may prejudice and prejudice the two-state solution in Jerusalem and its surroundings.

The work of the Jerusalem Policy Forum is directed by a Steering Committee, whose members are representatives of the Peace and Democracy Forum and Ir-Amim:

- Prof. Elinoar Barzacchi
- Terry Boullata
- Avraham Burg
- Amos Gil
- Abdel Qader Husseini
- Prof. Nazmi al Ju'beh
- Saman Khoury
- Sarah Kreimer

The Forum acts as a joint caucus for creating and advancing policies and actions which further Israeli and Arab Jerusalem in a manner that ensures the dignity and welfare of all residents, and safeguards their holy places and their historical and cultural heritages.

In addition, a broad network of Palestinian and Israeli experts on Jerusalem issues, from a variety of professional disciplines, implements the work of the Forum, aiming to create a reality more conducive to advancing final status negotiations on the issue of Jerusalem.

## **Summary**

The Jerusalem Policy Forum recognizes that environmental issues cross borders. Therefore, treating environmental hazards requires arrangements that involve agreement across those borders, and which take into consideration the needs and interests of peoples on both sides of the divides.

In the case of Jerusalem, systems of solid waste management can further complicate political divisions, or can create a fulcrum for future political agreements. Currently, solid waste management in East Jerusalem and the Jerusalem area fails to take into consideration the needs and interests of the Palestinian population. In addition, there is little or no enforcement of existing Israeli regulations that govern proper waste collection. This neglect harms both the Palestinian and Israeli populations which share the city of Jerusalem. Furthermore, current waste management for Jerusalem as a whole – in which Israeli waste is disposed of in the Abu Dis site in the West Bank – violates internationally agreed-upon principles and laws that mandate that waste not be transmitted across borders without agreement.

The Jerusalem Policy Forum recommends the following principles in approaching the issues of waste management in East Jerusalem:

## **Principles**

**Equitable service.** Manage waste collection in East Jerusalem so as to provide clean and healthy Jerusalem neighborhoods – both Palestinian and Israeli. Residents of both sides of Jerusalem – Palestinian and Israeli – pay city taxes, and are entitled to receive waste collection service at a standard level, regardless of ethnic or national origin.

**Equitable enforcement of environmental laws.** Enforce laws regarding illegal dumping of waste in all neighborhoods of Jerusalem.

**Community participation.** Involve the local community in design of the waste management system, and ensure its share in the economic benefits of environmental clean-up.

**Upholding international agreements.** Waste from West Jerusalem is to be disposed of within Israel proper, excluding East Jerusalem, barring express agreement by Palestinian authorities to the terms of the transmittal and disposal of Israeli waste in the West Bank.

## **Steps**

Specifically, the Forum proposes the following steps in order to begin redesigning the waste management systems operating in East Jerusalem:

- Develop, with input from the Palestinian community, a strategic plan for solid waste management for East Jerusalem.
- Develop, with local communities, pilot projects for waste clean-up (short and medium term) in East Jerusalem.
- Halt the current system of disposal of Jerusalem waste in the West Bank Abu Dis site without official Palestinian agreement.
- Involve the affected Palestinian municipalities and the Palestinian Authority in developing clean-up operations and alternatives to the Abu Dis site. The terms of any tender offered to capture the gases expelled from the Abu Dis site should be prepared with participation of both Palestinian and Israeli authorities.

## **1. Introduction**

Lack of proper waste management constitutes one of the major environmental and health hazards in East Jerusalem and the surrounding areas, and has implications for future political resolution of the Palestinian/Israeli conflict in Jerusalem. Solid waste, including municipal and construction waste, is often disposed of illegally, dumped in illicit sites or along side roads, and/or burned in close proximity to populations. This unfortunate outcome is a result of a combination of factors including: perverse economic incentives, political barriers, lack of developed infrastructure, limited public awareness, and a top-down policy with little public participation by the affected populations. The waste that is disposed of according to Israeli law is also problematic in that it is deposited in a landfill in Abu Dis (the West Bank), which is under Palestinian territorial authority, in contradiction to international law which prohibits the transport and disposal of wastes across borders without mutual consent. Moreover, the landfill is near capacity, and additional landfill sites are still undesignated. This fact furthers emphasizes the urgent need for a comprehensive solid waste policy for the area.

This policy paper will describe the nature and scope of the current problem. It will outline the current policies in place to address solid waste management in the Jerusalem area. While the primary focus of the work is on the specific waste management issues of East Jerusalem, the particular situation, in which waste from both East and West Jerusalem is collected and disposed of in a dump outside the city limits, necessarily transcends neighborhood and municipal boundaries.

After discussing the current problems, this paper will present a critical review of proposed future policies which fail to take into consideration the specific needs of the local populations and fail to recognize fully the unique demands of a situation characterized by highly asymmetric economic and political power. Such asymmetries demand unique policies in terms of stakeholder participation, capacity development, and cost-sharing. It will also address specific international legal issues which will bear on future waste management plans.

Finally, this paper lays out a program for developing an integrated strategic management plan for solid waste management in East Jerusalem and its surrounding Palestinian areas. This plan involves working with a broad range of stakeholders to minimize waste generation and to develop effective collection and treatment. It also outlines a program for developing local capacity to take advantage of the potential economic opportunities in waste management and resource recovery and recycling. Furthermore, while the proposed plan follows a long term vision, it includes a limited number of proposed pilot projects and policies that are implementable in the short term.

## **2. The Current Situation of Solid Waste (Mis-)Management in East Jerusalem**

### **2.1 The Current Management Structure**

According to the management system currently in place, solid waste from Jerusalem is managed by a single policy implemented at a regional level. The “Jerusalem District”, the regional administrative unit for waste management, includes the territory of the Israeli-defined Municipality of Jerusalem on both sides of the Green Line (the pre-1967 border), as well as nearby Israeli and Palestinian communities that lie outside the boundary of the municipality. Given this administrative structure, it is not possible to address the solid waste problems of East Jerusalem without also addressing those of West Jerusalem and of the surrounding municipalities.

Current regulation stipulates that all municipal solid waste (MSW) from the Jerusalem District be collected by the municipality and deposited in a landfill located in Abu Dis.<sup>1</sup> The municipality must also pay tipping fees, which are based on the weight of the waste deposited. Construction waste is treated separately from MSW under current regulation. All construction waste from the Jerusalem District is also to be delivered to the Abu Dis landfill, however, the responsibility for the collection and transport of construction waste to the landfill falls on the building contractors themselves. The contractors are also responsible for the associated tipping fees.

Actual direct costs to municipalities and contractors of solid waste treatment fall into three categories: 1) the cost of collection and transport of waste to the landfill, 2) a per-ton tipping fee charged by the landfill operators to cover basic operations including sorting, treatment, and disposal, and 3) an additional per-ton waste surcharge imposed by national law since 2007, intended as an additional incentive to reduce waste generation and encourage recycling. As of 2009, this additional waste surcharge is 30 shekels per ton for mixed municipal waste and 2.40 shekels per ton for construction waste. These fees will increase to 50 shekels and 4 shekels per ton respectively by 2011. The revenue from the waste surcharge is deposited in a special waste management fund administered by the Israeli national government. Municipalities can apply to this fund for grants to finance waste reduction, treatment, and recycling programs.<sup>2</sup> Palestinian communities outside the

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1 A second much smaller landfill, Hruvit, is located near the Israeli town of Beit Shemesh and serves some of the smaller communities in the western part of the Jerusalem District. As this site does not receive waste from the Jerusalem municipality or any of the Palestinian communities surrounding Jerusalem, it is not addressed in this policy paper.

2 The fund is to make available to distribution roughly 120 million shekels for waste management plans over the course of 2008-2009. As will be discussed further later, this represents a significant potential source of funding for Jerusalem.

Jerusalem municipal boundaries are currently exempt from this surcharge, although the matter is currently before the Israeli courts.

The Abu Dis landfill is managed by a for-profit company, the Company for the Economic Development of Maaleh Adumim, owned by the Israeli settlement Maaleh Adumim. The landfill uses an area of about 430 dunams of land confiscated by the Israeli government and unilaterally declared as Israeli state land. According to the Israeli Civil Administration, between 1200 to 1500 tons of solid waste are delivered to the Abu Dis site per day; of which roughly 250-300 tons are from Palestinian communities outside of East Jerusalem (Elbaz 2008).<sup>3</sup> (No data is available on the amount of waste originating in East Jerusalem, as figures are only collected at the municipal level.)

Unknown quantities of waste are recovered from the Abu Dis landfill for recycling. This occurs at the formal level by the landfill operators, as well as at the informal level by scavengers who routinely search the landfill site for materials that can be reused or that command a price in resale markets. The exact amount of waste recovered by scavengers is unknown, but it is believed to be considerable on an absolute basis, though would comprise a very small portion of the overall amount of disposed waste. Though scavengers provide a valuable service in terms of resource recycling, their actions place themselves at potentially significant health risks.

**Figure 1: Leachate at Abu Dis Dumping Site**



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3 These numbers are what the Civil Administration officially presents. The landfill administrators confirm that these numbers are roughly correct. On their website, they simply list that they receive over 1000 tons of waste per day, without specifying where from.



## **2.2 Illicit Waste Disposal**

While both the tipping fees and the waste surcharge were ostensibly initiated as part of an attempt to implement the “polluter pays” principle,<sup>4</sup> waste disposal costs are a well-known disincentive for legal waste disposal, especially in poorer communities (Fullerton and Kinnaman 1995; Porter 2003). Thus, while intended to finance advanced waste management and recycling programs, the imposition of tipping fees and waste surcharges may be aggravating the already widespread phenomenon of illegal waste disposal.

Both Municipal Solid Waste (MSW), which is primarily household waste, and construction waste are deposited in dozens of illegal dumping sites. As mentioned, MSW and construction waste are governed by different policies, and thus, reasons for their illegal disposal differ somewhat.

**MSW.** An unknown amount of MSW is disposed of or incinerated illegally in neighborhoods, along the sides of roads, and at various illegal dumping sites in the West Bank which are cheaper than the Abu Dis site.<sup>5</sup> Reasons for the lack of effective disposal include neighborhood-level factors such as insufficient number of receptacles, infrequent collection, and a lack of public awareness as to the associated health risks, as well as institutional factors such as the existing incentive structure facing the municipalities, including the tipping fees which may be an economic incentive for poorer communities to dump illegally.

**Construction Waste.** Because the burden of construction waste disposal is on the contractor rather than the municipality, as in the case of MSW, each contractor faces significant personal economic incentives to dispose of the waste illegally. In so doing, the contractor saves the cost of delivery to Abu Dis, which is a round trip of about 25 kilometers from the center of Jerusalem, as well as the associated tipping fees and waste surcharges. Illegal dumping of construction waste has been recognized as a serious policy failure throughout Israel (State Comptroller and Ombudsman 2008), and in East Jerusalem in particular (MoE 2008). The Israeli Ministry of Environment estimates that between 127,000 and 198,000 tons of construction waste and between 0.5 to 2 million tons of dirt in need of proper disposal are produced in the Jerusalem region annually. Of this, it is estimated that less than 10% is actually deposited at approved waste facilities; with over 90% being dumped illegally, much of it in what the Ministry defines as the “Old City basin” and the “seam” areas, both of which are in East Jerusalem (MoE 2008a).

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4 See for example, Ministry of Environment website: <http://www.sviva.gov.il>

5 Illegal dumping in neighborhoods or along side of roads, so-called “midnight tipping” or “fly-tipping” incurs no cost, while disposal at unauthorized waste dumps in the West Bank can cost as low as 20 shekels per ton, as compared to dumping fees of 100 shekels or more for legally disposed of waste (Katz 2008).

According to Israeli Ministry of Environment officials, more than half of 500 or so identified illegal waste dumps throughout Israel and the West Bank have been closed, including all 77 large waste dumps (Nissim et al 2005; Elbaz 2008). Still, illegal waste disposal remains a serious problem, especially in East Jerusalem, as noted by the Ministry itself and the State Comptroller (2008).

Illegal waste is harmful to the local communities in ways beyond the unsightly aesthetics and unpleasant odors. Illegally disposed waste presents a variety of health hazards. Organic waste serves as breeding grounds for insects and rats, both of which are disease vectors (e.g., Al-Khatib et al 2008; Rego et al 2005). Glass and metal waste cause cuts and infections, especially among children who often play in open areas near the wastes and among poorer people who often scavenge for recoverable materials (e.g. Al-Khatib et al 2007). The burning of uncollected waste, a common phenomenon in many Palestinian neighborhoods, can aggravate breathing difficulties such as asthma, and can release toxins such as dioxin, a known carcinogen. In addition, seepage from waste (leachate) can contaminate local land and groundwater supplies, which is particularly relevant in the West Bank, an area almost completely dependent on the Mountain Aquifer for its water supply (ibid 2007). Illegal waste sites have significant economic impacts as well, in reducing property values and rendering open spaces unusable. Furthermore, waste in and near the Old City is a blight for tourists and may reduce tourism revenue.

**Figure 2: Waste Mis-management in Al-Tour, East Jerusalem**



**Figure 3: Waste Mis-management in Ashayyah, East Jerusalem**





**Figure 4: Waste Mis-management in Mount of Olives, East Jerusalem**



**Figure 5: Ras Al-Amoud / Silwan, East Jerusalem**



### **3. Future Plans for Waste Management in the Jerusalem District**

#### **3.1 Government Initiatives**

The government of Israel has recognized that past policies to address waste management have been insufficient. In 2005, Israel published a Master Plan for the Treatment of Solid Waste (Sobredlov et al 2005), and the Israeli Ministries of the Environment and the Interior published a Master Plan for Construction Waste in Jerusalem in 2006 (MoE and MoI 2006). In addition, in July 2008, the Jerusalem Municipality and the Ministry of the Environment launched a new campaign to address construction waste, with a focus on East Jerusalem (MoE 2008b), with a budget of 21 million shekels (Rinat 2008). Also in July of 2008, the Israeli Civil Administration, the military body in charge of overseeing the day to day management of much of the West Bank, issued a military order against the illegal dumping of garbage by Israeli trucks in the occupied West Bank (Katz 2008).

Major objectives of future plans include:

- a) Reduction of illegal waste disposal
- b) Promotion of waste minimization and recycling
- c) Establishment of transfer stations for construction waste
- d) Identification of a future landfill site following the anticipated closure of the site at Abu Dis
- e) Development of energy recovery schemes for the Abu Dis landfill

Policies for reduction of illegal waste disposal include educational campaigns, increased monitoring, and higher penalties for non-compliance. The new Civil Administration order, for instance, provides for immediate confiscation of trucks and fines against the drivers of “Israeli garbage trucks caught driving in the West Bank without proper permits - even if they do not dump garbage” (Katz 2008). Policies to promote waste minimization and recycling include developing initiatives to facilitate waste trade through, for instance, the establishment of electronic waste trading boards (MoE 2008a).

Transport to the Abu Dis landfill can be costly, especially due to political obstacles such as the separation barrier, which requires drivers to travel roundabout routes. As such, the establishment of intermediate transfer stations where waste can be dropped off for later transfer to Abu Dis can reduce political obstacles and costs. The Master Plan for dealing with dry waste in Jerusalem calls for the development of two transfer stations: one for building and one for construction waste (MoE and MoI 2006). Both designated areas lie beyond the Green Line (pre-1967 borders).



The Abu Dis dump itself is filled beyond capacity. It was scheduled to be closed during the nineteen nineties, but has had its use permit repeatedly extended due to lack of alternatives. Replacement sites for the Jerusalem district's waste are currently being evaluated. According to criteria of the Ministry of the Environment based primarily on geological suitability, the preferred site is near the settlement Mishor Adumim in the West Bank (MoE 2006). In fact, the top sites are all located in the West Bank. As will be discussed below, a West Bank dump for Jerusalem waste, unless agreed to by the Palestinian Authority, would be a violation of international law. This fact has delayed the approval of an alternative site, and has facilitated the continued use of Abu Dis, despite its violation of international law.

The breakdown of organic waste in oxygen-poor conditions such as those in landfills fuels the production of methane gas. Methane build-up presents a potential hazard if left unattended, but a potential economic opportunity if used to produce energy, as is currently done in many areas around the world (Ujj et al 1997), including at the Hiriya landfill outside of Tel Aviv. The Israeli government is currently preparing a tender for private sector bidding to produce energy from the Abu Dis landfill. According to estimates, it will be able to produce 2400 cubic meters of gas per hour for several years, which is enough to provide electricity to several thousand homes. Profits from such a tender are estimated at several million dollars (Ynet 2008). Energy production from the landfill can continue for several years after the landfill is no longer in use.

### **3.2 Critique of Currently Proposed Initiatives**

Current policies and proposals to address solid waste treatment in East Jerusalem and the surrounding Palestinian areas recognize the severity of the problems at stake and represent improvements over past efforts. These policies, however, are inadequate from several perspectives, including a lack of public participation, failure to provide economic incentives, and failure to comply with international law. Furthermore, they do not incorporate Palestinian economic development as part of the solution to solid waste management, despite a broad range of economic opportunities in this field. The following subsections highlight some of the most prominent shortcomings of existing waste management policies.

#### **3.2.1 Public Participation**

Current and future plans for waste management in the Jerusalem area call for little consultation with or involvement of local communities to identify local needs, to enlist them in education campaigns, or to take an active role in waste minimization or waste treatment processes. This despite the fact that public participation is considered by many as essential for effective MSW management (e.g., Mongkolnchaiarunya 2005; Ahmed and Ali 2006; and Joseph 2006). Failing to involve the local communities in the policy planning process risks alienating the populations and developing inappropriate objectives, which are liable to amount to continued environmental and health hazards as well as wasted economic resources.

### **3.2.2 Economic Incentives and Cost-Sharing**

Current policies require high fees for waste disposal and fail to provide sufficient economic incentives for proper waste treatment. As mentioned, the current disposal costs are likely primary contributors to the current proliferation of illegal waste disposal in East Jerusalem and the West Bank, especially in the case of construction waste (Reuters 2007; Katz 2008; UPI 2008). The current policy approach, which threatens harsher punishment for violation, is a credible disincentive only if monitoring and enforcement is widespread; an unlikely proposition. Furthermore, harsher penalties for waste disposal in the West Bank, such as those outlined by the July 2008 military order, may only lead to higher rates of illegal disposal in East Jerusalem, if enforcement is weak. Furthermore, such “stick only” approaches offer little in the way of “carrots” that would actually provide positive incentives for proper waste treatment.

The current policies also largely fail to take into consideration the extreme economic disparities between the various populations within the Jerusalem District. Efforts to apply the polluter pays principle by means of waste fees and surcharges, for instance, are generally commendable from both an environmental justice and an economic efficiency perspective. However, observers have noted that application of the polluter pays principle under conditions of high economic asymmetry is likely to lead to underprovision of environmental services<sup>6</sup> (e.g., Fischhendler 2007). In such cases, there is a need for innovative cost-sharing and economic incentive programs which take into consideration various communities’ ability to pay.

### **3.2.3 Legal Issues**

Because both the currently proposed transfer stations and the future landfill site will handle waste from within Israel, their West Bank settings are illegal. This fact was acknowledged in a legal opinion issued by the Israeli Ministry of Justice, which stated that disposal of waste by Israel in the West Bank is illegal and ordered Israel to find a solution to waste problems within the Green Line (Shuval 1997). This position is based on various international legal codes, including:

- a. Articles 23 and 53 of the Hague Regulations, which deal with the laws and customs of war and occupation,<sup>7</sup> and prohibit the confiscation and destruction of properties occupied as a result of military conquest.

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6 i.e. municipal services that have environmental dimensions, such as waste collection

7 Convention (IV) Respecting the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land. The Hague, 18 October 1907. Available at: <http://www.icrc.org/ihl.nsf/385ec082b509e76c41256739003e636d/1d1726425f6955aec125641e0038bfd6>.



- b. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, which prohibits cross-border trade in hazardous wastes and other waste materials between countries without mutual prior consent, and calls for all countries to manage and dispose of wastes in an “environmentally sound manner.” To this end, parties are expected to minimize the quantities that are moved across borders, to treat and dispose of waste as close as possible to their place of generation and to prevent or minimize the generation of wastes at source.

Its violation of international law is just one reason that Israel may wish to cease such violations. A further incentive is international pressure to come to an agreement regarding an autonomous Palestinian state. A more pressing motivation, perhaps, is Israel’s desire to join the Organization of Economic Cooperation and Development (OECD). Membership in the OECD would likely improve Israel’s economic, trade, and credit status, as well as its political profile; however, membership is conditional upon compliance with a wide range of accepted international law, including international environmental regulations such as the Basel Convention.

In order to comply with its obligations under the Basel Convention, Israel will likely have to choose from one or more of three options:

- 1) Treat all of Jerusalem waste within (pre-1967) Israeli borders.
- 2) Treat waste from West and East Jerusalem separately, with the West Jerusalem waste treated within Israel, and East Jerusalem and that of surrounding Palestinian areas treated in the West Bank.
- 3) Treat all waste from the Jerusalem District within the West Bank by official agreement with the relevant Palestinian regulatory authorities.

Treating all the waste within Israel would likely involve transporting the waste long distances, which would also add costs to disposal. Separate treatment of solid waste from Palestinian and Israeli communities would require new administrative and financial structures. Currently, the Municipality of Jerusalem finances waste disposal from all parts of the city. However, if Israeli and Palestinian waste is treated separately, the financing may also be separated, which could require East Jerusalem to finance its waste collection alone, with the cross-subsidy of tax revenues from richer neighborhoods in West Jerusalem. Disposal of all Jerusalem District waste by agreement with Palestinian government representatives, at a site in Mishor Adumim or somewhere else in the West Bank, would be legal and would follow known precedents for transboundary trade in solid waste (Canada-U.S., for example). However, currently, the sites preferred by Israel remain under Israeli control and neither the Palestinian Authority nor any other official Palestinian representative body has authority over the areas. Thus, under current circumstances, they are not in a position to accept any offer that Israel may make on this issue.

### ***3.2.4 Palestinian Participation in Waste Treatment***

Palestinians currently exploit only a fraction of the economic opportunities involved in waste treatment and recovery. Potential small-scale examples include neighborhood- or community-level waste collection and composting cooperatives. Medium-scale opportunities include development of businesses in waste sorting and recycling. Large-scale opportunities include production of energy from the Abu Dis landfill and future landfills, the selling of such energy as greenhouse gas (GHG) offsets via the Kyoto Protocol's Clean Development Mechanism (Ayalon et al 2001), and remediation and rehabilitation of dump sites, including the Abu Dis landfill. While rehabilitation of waste sites has been initiated elsewhere, including in Israel (e.g. Ayalon et al 2006), no such plans currently exist for the Abu Dis site.

Each of the above categories of economic opportunities would require different levels of assistance. Small-scale initiatives are in need of training and organizational development assistance. Medium- and large-scale initiatives face challenges in terms of access to affordable finance, necessary numbers of skilled workers, and integration with larger economic markets necessary for selling recovered products or energy. Each of these challenges demands unique approaches.

## **4. Development of a Strategic Management Plan for Solid Waste in the Jerusalem District**

Within the context of high-level political negotiations between Palestinians and Israelis, low-profile issues like basic environmental infrastructure and services are often left unaddressed, resulting in insufficient management structures for the effective provision of such services following agreements (Feitelson and Levy 2007). In order to ensure that adequate regulatory, economic, and social frameworks exist for proper treatment of solid waste in East Jerusalem and the surrounding Palestinian areas, an integrated strategic plan for solid waste treatment for the area is needed.

Such a plan should:

- 1) outline current obstacles to effective waste treatment in the area
- 2) Identify opportunities for overcoming such obstacles
- 3) Identify opportunities for promoting economic development based on opportunities in the waste treatment sector
- 4) Provide recommendations for further actions
- 5) Ensure integration with larger national waste management plans

The plan should incorporate both local experience as well as international experience in dealing with waste treatment, especially from areas with similar economic or political conditions.<sup>8</sup> Given the disparity in economic conditions between communities involved, a comparative analysis of various cost-sharing policies for waste treatment will be conducted based on existing case studies (e.g., Coram 2003; Fischhendler 2007; Schalimtzek and Fischhendler [forthcoming]).

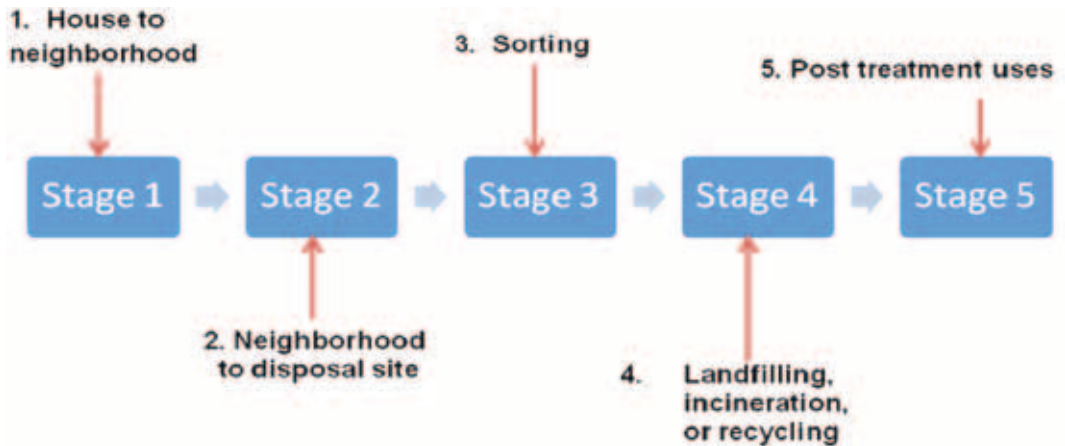
In addition to the strategic plan, the project will also design and implement small-scale pilot projects at the neighborhood or community level. These will both provide an immediate benefit to the communities as well as provide a real world laboratory for validating and refining recommendations provided in the strategic plan.

### **4.1. Analytical Framework**

For the purposes of analysis, it is useful to divide waste collection and treatment in the area into several stages, as each has its own obstacles and opportunities. These stages are presented in schematic form in Figure 1, and described in greater detail below for the case of household waste. Construction waste will be evaluated in a similar, separate framework.

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<sup>8</sup> Of particular interest will be areas with high economic asymmetry and recent political divisions, for instance, Germany immediately post-reunification and South Africa.



**Figure 1: Stages in Municipal Solid Waste Treatment**

In general, obstacles to or other needs for effective waste treatment can be organized into the following categories:

1. Physical infrastructure needs
2. Economic incentives
3. Economic infrastructure needs
4. Awareness and education
5. Political opposition and apathy
6. Legal and regulatory framework
7. Local expertise

Perceived obstacles and needs are listed below. The actual list, however, will be expanded and refined during the project based on further, more detailed and structured discussions with various stakeholders. The project will produce a matrix outlining the obstacles and needs for each stage of waste treatment. This will be used to inform eventual policy recommendations.

The first stage of waste disposal is transfer from the household to the neighborhood waste receptacles. Likely obstacles to proper waste treatment in this stage include insufficient number of receptacles where needed, low public awareness, and lack of incentives for proper disposal.<sup>9</sup> Opportunities to address such obstacles based on successful experiences

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<sup>9</sup> In addition, Al-Khatib et al (2007) noted that the design of waste receptacles in use in the West Bank also hinders usage. They noted that children were often responsible for disposing household

both abroad and in other Palestinian communities include reduction of waste production at the source, provision of additional receptacles, community based educational campaigns, and the development of funded cooperatives for neighborhood waste collection and delivery to central waste bins (Larson and Massetti-Miller (1984); Feiock and West 1996; Porter 2003; Al-Khatib et al 2007).

The second stage is collecting neighborhood waste and delivering it to dumps. Obstacles to effective collection and delivery are similar to first-stage obstacles, but may also include difficulties of access to collection vehicles, insufficient frequency of collection, mixed waste types, inadequate monitoring, etc. As mentioned, the existence of the separation barrier adds great difficulty to moving waste from one side to the other. In addition to the potential solutions listed for stage one, other potential solutions include promoting and incentivizing local sorting as well as recycling (including neighborhood composting) (e.g., El-Hamouz 2008), developing neighborhood transfer stations, working with community leaders to inform them of how to effectively advocate vis-à-vis the responsible authorities for effective waste collection.

The third stage of waste treatment is the sorting stage. Sorting of waste by type is essential for eventual resource recovery and safe and effective disposal. Most waste sorting occurs at the waste site, however, there is limited opportunity for such practices at the community level. Currently waste sorting at Abu Dis is conducted at the informal level by scavengers and formally by the landfill operators. Informal scavenging can be an effective form of sorting, however, it often exposes populations to health hazards. Experiences in places such as Cairo indicate, for instance, that coordination among and even incorporation of scavengers into local cooperatives can improve their economic and health conditions and may allow for formal cooperation with, as opposed to confrontation with, landfill operators (e.g., Porter 2003; Fahmi and Sutton 2006).

The fourth stage is the final treatment of the waste, either by burial at landfill, incineration, or some form of reuse or recycling. Currently, landfilling is the primary method, however, the Israeli government has plans for developing electronic trading boards for exchange of recycled goods. Palestinian participation in this stage is limited due to political obstacles and to underdeveloped economic capacity with regards to resource recovery and recycling businesses. Given the current search for locations for transfer stations and new landfills, Palestinian needs for this stage include legal advocacy and economic development in order to competitively participate in the recycling sector. As noted, while unilaterally decided disposal of waste by Israel in the West Bank is illegal, an agreed transfer of waste via an economic agreement between parties is legal. There are several precedents for such agreements; however, a mechanism would be necessary to ensure that payments are made

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trash, however, the openings on large bins were often too high for children to reach. The result was that bags of waste were left nearby bins, exposed to rodents and cats.

and that the waste is effectively treated, especially given the relative economic situations of the two parties.<sup>10</sup>

The fifth and final stage is post-treatment, which includes uses of resources after the treatment of waste. This includes, for instance, identification of markets for waste-fueled energy, development of financing through selling greenhouse gas (GHG) offsets, and developing options rehabilitation and rezoning of the landfill site. Again, the current obstacles for effective exploitation of such opportunities seem to be lack of awareness, lack of economic infrastructure, including lack of relevant private sector businesses, and political impediments.

All of these stages need to be analyzed within the context of possible policy and legal frameworks. Part of the strategic plan will include presentation of different policy recommendations based on overarching political arrangements. For instance, in the case of an alternative landfill post-Abu Dis, disposing of West Jerusalem waste in the West Bank may be a preferred option if an authorized Palestinian body agrees to it. If such an agreement is not forthcoming, legally acceptable options include either separate collection and disposal for East and West Jerusalem, or combined disposal within Israel.

## **4.2 Project Needs**

In order to properly progress, the project will need to collect existing data and generate data where it does not exist. Identified physical data needs include:

1. Amounts and types of waste produced in the study area
2. Costs involved, including capital costs (e.g., trucks and land) and operational costs (e.g. human resources, dumping fees, etc.)
3. Extent of environmental damages (e.g., number of illegal waste sites, level of pollutions, public health impacts)
4. Extent of recycling (formal and informal)

In addition, there is a need to meet with various stakeholders in order to identify perceived needs, interests, and capacities. These stakeholders include including representatives of neighborhood councils, local authorities, relevant government ministries, landfill operators, local chambers of commerce, scavengers, and building contractors. Structured and open interviews will be conducted in order to understand local communities' priorities, what

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<sup>10</sup> The city of Toronto in Canada ships its municipal solid waste to the state of Michigan in the United States for disposal, for instance. Unfortunately, there have been situations in which developing economies have been the recipients of the waste, but have not implemented proper treatment techniques, thereby putting their environment and populations at risk (e.g., Polgreen and Simons 2006).

efforts have been attempted in the past, and what they consider to be primary obstacles to proper waste treatment. We will also consult with legal experts both on environmental and international law to ensure that eventual recommendations are within the boundaries of accepted practices and norms.

### **4.3 Planning Matrix and Identification of Potential Solutions**

Following an initial data gathering and needs assessment, the next step is to develop a planning matrix in which the primary obstacles in each stage are identified. For clarification purposes, obstacles will be categorized by type:

- a. Physical infrastructure
- b. Economic incentives
- c. Economic infrastructure and development
- d. Awareness and education
- e. Political apathy and opposition
- f. Legal framework
- g. Capacity building

Once the needs and obstacles have been identified, the next stage is to develop sets of short, medium, and long-term recommendations. These will likely be directed at several target audiences, including local community organizers, private sector actors, and regulatory bodies. Different strategies for engaging each of these actors will be developed. Again, due to the large differences between domestic and construction waste, separate sets of recommendations will be developed for each.

The strategic plan will also identify potential sources of financing for the recommended policies. These may include government sources, including resources from the government fund for waste reduction and recycling, private sector investment, negotiated low-cost loans from banks, and micro-finance opportunities. Given the political and economic asymmetries, it will evaluate a number of cost-sharing arrangements.

In order to maximize the chances for adoption and eventual implementation, the strategic waste management plan will take into consideration both current regulations within Israel as well as waste management plans being developed for the Palestinian Authority, such as those currently being considered for funding by the World Bank (World Bank 2008).

#### 4.4 Pilot Projects

Pilot projects that are implementable in the short to medium term offer an opportunity both for immediate improvement in environmental conditions and for testing the assumptions of the strategic plan. Pilot projects can be both small and medium scale. Actual pilot projects will be developed and initiated only after consultation with stakeholders, however, examples of potential ideas for such projects are listed in Table 1 below.

**Table 1: Potential Pilot Projects**

<b>Project Scale / Duration</b>	<b>Project</b>
Small scale – Short term	<ul style="list-style-type: none"> <li>• Economic incentives for neighborhood collection</li> <li>• Local composting</li> <li>• Education campaigns</li> <li>• Training local community representatives to effectively advocate for waste management needs vis-à-vis the municipality and other relevant regulatory bodies</li> <li>• Neighborhood transfer stations</li> </ul>
Small scale – Medium term	<ul style="list-style-type: none"> <li>• Neighborhood waste collection cooperatives</li> <li>• Formalizing scavenger recycling networks</li> <li>• Establishing micro-credit financing for small scale waste collection and recovery initiatives</li> </ul>
Medium scale – Short term	<ul style="list-style-type: none"> <li>• Developing waste exchange networks among contractors</li> </ul>
Medium scale – Medium term	<ul style="list-style-type: none"> <li>• Establishment of intermediate sorting and transfer stations</li> <li>• Assisting private sector actors to develop tender proposals for waste management activities</li> </ul>

In order to ensure that the pilot projects both achieve their intended objectives and serve as a tool for informing a broader strategic plan, the following steps are necessary:

- a. Identification of project partners
- b. Identification of methods for administering pilot projects
- c. Establishment of methods for monitoring and evaluating success of pilot projects
- d. Identification of financing sources for longer term proposed projects and for maintaining expanding successful pilot projects beyond initial period and/or location



## **5. Conclusions**

The Jerusalem Policy Forum recognizes that environmental issues cross borders. Proper treatment of environmental hazards, therefore, requires arrangements that involve agreement across those borders, and take into consideration the needs and interests of peoples on both sides of the divides.

Current Israeli waste management policies in Jerusalem as a whole, and specifically in East Jerusalem, have largely failed to adequately identify and address the specific needs of Palestinian communities. They are characterized by a top-down approach which does not address the unique economic and political challenges faced by the affected communities. Furthermore, illegal disposal of solid waste is widely recognized as an important environmental and health hazard in East Jerusalem and the surrounding Palestinian areas.

The Forum proposes redesigning the system of solid waste management in East Jerusalem and its environs in keeping with the following principles:

- Prohibit transferring waste across borders without agreement of the communities on both sides.
- Involve the communities affected by the waste in designing waste management systems.
- Ensure that communities affected by the waste share in the economic benefits of environmental clean-up.

Specifically, the Forum proposes the following steps in order to begin redesigning these systems:

- Develop, with input from the Palestinian community, a strategic plan for solid waste management for East Jerusalem.
- Develop, with Palestinian communities, pilot projects for waste clean-up (short- and medium-term) in East Jerusalem.
- Halt the current system of disposal of Jerusalem waste in the West Bank Abu Dis site without official Palestinian agreement.
- Involve the affected Palestinian municipalities and the Palestinian Authority in developing clean-up operations and alternatives to the Abu Dis site. The terms of any tender offered to capture the gases expelled from the Abu Dis site should be prepared in coordination with and full agreement of the Palestinian Authority.

Development and implementation of such a strategic plan which identifies local needs and the current physical, political, legal, and economic obstacles to proper waste management would be a useful contribution both in terms of minimizing environmental and health risks as well as potentially providing opportunities for local economic development, and future political agreement.

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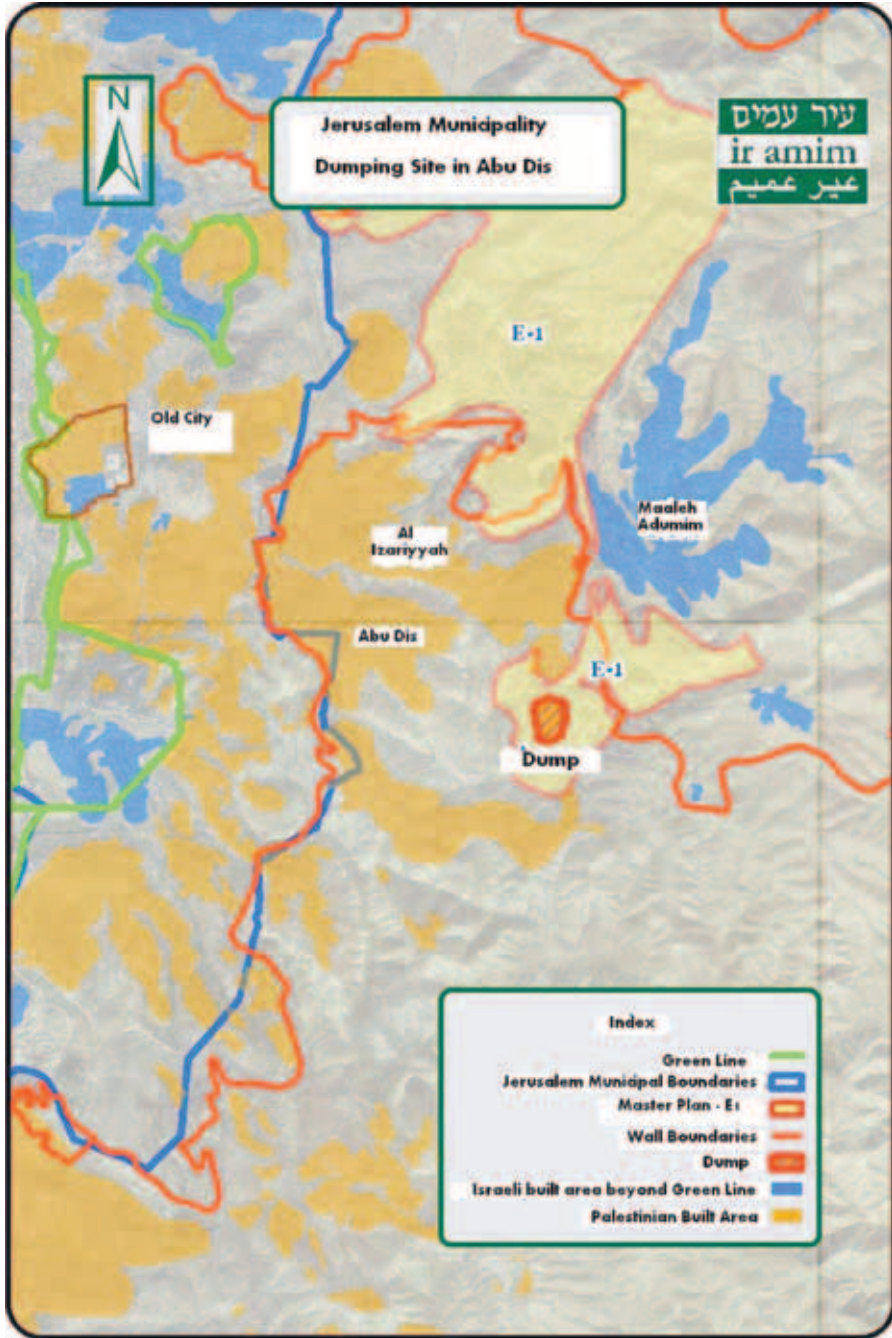
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Appendix

Map of Jerusalem and Abu Dis Dump Site



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