



# Household Solid Waste

## Overview of Household Solid Waste Sector

Generally speaking, waste is a wide term referring to consumed materials or resulting from an activity or a process, and which, owing to its physical and/or chemical and biological properties becomes useless and therefore neglected and intended to be discarded or disposed of. Current legislations in this respect, as well as management practices and most of CDR's projects and contracts concern domestic solid waste. Applicable laws and regulations stipulate that other types of waste should be treated by the private entities producing them, under the guidance and full supervision of the concerned ministries, according to the "polluter pays" principle.

**Current situation:** the concerned authorities are working towards the promotion of a comprehensive waste management plan in Lebanon that is compatible with the socio-political situation and translates into actions the desired expectations, in order for it to become integrated into the sustainable development principles of the national programs and policies, thus reducing environmental degradation.

The Council of Ministers' decision No.1 dated 30/3/2010, commissioned a committee headed by the Prime Minister and composed of: the Minister of the Displaced, The Minister of State for Administrative reform, the Minister of Interior and Municipalities, the Minister of the Environment, the Minister of Energy and Water, and the President of CDR, to develop a plan proposal concerning waste management in all Lebanese regions, provided that it covers all the aspects of the issue, particularly:

- 1) The techniques and methods to be adopted for the implementation of this plan
- 2) The suggested locations for it
- 3) How to provide the necessary funding
- 4) The authority to be in charge of this plan

The committee shall also make recommendations concerning the measures and procedures to be taken with regard to the temporary landfill in Naameh.

And on 1/9/2010, the Council of Ministers issued decision No. 55, to endorse the recommendations of the inter-ministerial committee summarized below:



*Rehabilitation - Zahle Landfil*

- 1) Adopt thermal decomposition and waste-to-energy technologies in large cities
- 2) Adopt the 2006 master plan and study the possibility of adoption of thermal decomposition in the rest of the country
- 3) Engage the private in the provision of Solid Waste Management Services and facilitate its tasks, turn-key sector participation (from collection to final treatment) or by 2 Different Options:
  - Collection,
  - Treatment
- 4) Mandate the MoE and CDR to reconcile and merge the two plans, proposed by each of them, as was agreed upon above.
- 5) Mandate the Ministry of Energy and Water to draft regulations for waste-to-energy generation by the private sector.
- 6) Offer incentives to the municipalities that will host waste treatment facilities: thermal decomposition plants, processing stations, composting stations and landfills
- 7) Mandate CDR, in coordination with the MoE, to contract an international consulting firm to:
  - Select the most appropriate and proven technologies for the Lebanese case (based on the spirit of the plan).
  - Setting the technical specifications for the preliminary classification of the thermal decomposition companies (Due diligence to short list only proven technologies)
  - Assessment and classification of companies



*Solid waste - Sorting & composting*

- Establishing tender documents for the final bid
  - Bid appraisal
  - Monitoring the implementation
- 8) Mandate the Ministry of the Environment to sign a contract with an international consulting firm to control workflow quality according to the spirit of the plan and good work progress in it
  - 9) Mandate the MoE to hire a local consulting firm in order to conduct an awareness and guidance campaign to introduce the thermal decomposition technique and make it acceptable (admission).
  - 10) Vest authority in the Prime Minister to oversee implementation and secure funding, while benefiting from successful experiences in neighboring countries.
- Main Problems:**
- The problem of household waste in Lebanon lies mainly in landfill locations, whether they are ordinary dumps or landfill sites for disposal after the sorting and recycling processes; it also concerns waste management before reaching the dump. Therefore, the recycling and the composting processes should be promoted.
  - The financial perspective is considered the most important and accurate element when it comes to the implementation of any proposed waste management plan, especially in developing countries like Lebanon, for there are no adequate laws regulating this matter.
  - The legislations on the management of household solid waste in Lebanon are superficial, contradictory and unclear, especially with respect to the distribution of responsibilities and tasks between the concerned departments and ministries. Currently, a draft law concerning integrated waste management is being prepared.
  - The Union of Municipalities, with the administrative and technical support of the Ministry

of the Environment and Ministry of Interior and Municipalities, should unite their efforts for the selection of locations for dumps and sorting and composting facilities. This aim is to be achieved in the framework of an informational and consultative effort with the civil society that can hinder the implementation of projects if it is not respected and its views are not taken into account.

### **Main achievements of the (1992-2013) period**

The Lebanese governments did not adopt a central policy or a unified management strategy for the treatment of solid waste in Lebanon, since this issue fell within the powers and concerns of municipalities, acting as administration overseeing the proper execution of these services. However, the civil war caused a negative impact on the municipalities' financial, administrative and technical means, which reflected negatively on the continuity of these services. In the beginning of 1992, the government assigned the management of this sector in the capital and the suburbs to CDR, due to the incapacity of municipalities to deal with this problem. Ever since, the CDR has worked, in coordination with the concerned ministries, to put in place a comprehensive policy that provides the best solutions for Lebanon.

**Emergency plan for the treatment of solid waste in Greater Beirut:** Following the

closure of the Bourj Hammoud dumpsite in January 1997, the government decided to implement an urgent plan for the treatment of solid waste in Greater Beirut. A contract was signed with SUKOMI to expand and raise the capacity of the Amrousieh and Qarantina solid waste treatment plants, upgrade the sorting process, separate recyclable material and extract compost material. This plan also included the construction of sanitary landfills for Greater Beirut and its suburbs. Two sanitary landfills were established in Na'meh and Bsalim. Both are currently in operation.

**Rehabilitation of Tripoli dumpsite:** The uncontrolled dumpsite located on Tripoli coastline has been rehabilitated. A sea wall was constructed around it to reduce environmental risks. Moreover, the necessary equipment for operating the dumpsite in an environmentally safe way was procured in order to upgrade solid waste management in Tripoli region. The dumpsite has been in operation since 1998.

**Construction of Zahleh sanitary landfill:** The new sanitary landfill serving Zahlehcaza is complete and the required vehicles and equipment for its operation have been procured. The works and procurements were financed by the World Bank. This dumpsite has been in operation since 2001.

**Implementation of a sanitary landfill and a solid waste treatment plant project in the framework of the comprehensive**

**waste management plan in Baalbeckcaza.**

### **Procurement of waste collection equipment for various regions:**

Within the framework of the urgent program, the World Bank funded the procurement of waste collection equipment, including vehicles, street sweeping equipment and special containers. These were distributed on all Lebanese regions. In the second phase of this project and within the framework of the Household Solid Waste Management Plan (SWEMP), the World Bank funded the procurement of waste collection and street sweeping equipment for the regions where construction works of sanitary landfills or rehabilitation of uncontrolled dumpsites were completed, such as Beirut, Zahleh and Tripoli.

**Hospital waste treatment:** In 1998, the CDR awarded the hospital waste treatment study, funded by the World Bank, to ERM. Several phases of the study are complete. This has allowed concerned parties to take decisions regarding the most appropriate means for hospital waste treatment. The Ministries of Environment and Public Health together with CDR have decided to build a central incinerator, which complies with international standards and operates at a temperature of 1200oC minimum, as a possible means of hospital waste treatment. The environmental impact assessment and the design study have not been prepared because the appropriate construction site is not known yet.



**Marketing of compost and recyclable material:** The feasibility study for marketing organic compost and recyclable materials generated by the Quarantina, Amroussieh and other treatment plants was completed by ARCADIS/ EUROCONSULT in December 2003. The study was financed by the World Bank within the framework of SWEMP.

**Financial audit of amounts due to SUKLEEN and SUKOMI:** According to the Council of Minister's Decision No. 16 dated 14/8/2003 concerning the launching of an international tender for constructing and operating the solid waste treatment plants and landfills for a period of ten years, and in order to ensure the success of this tender, CDR was assigned to audit the amounts due to SUKLEEN and SUKOMI. Accordingly, the audit contract was awarded on 18/9/2003 to PRICEWATERHOUSECOOPERS, which is an international audit firm.

**Technical Assistance for identification of treatment plant and landfill locations and preparation of environmental impact assessment:** To implement the Council of Minister's directives concerning the identification of treatment plant and landfill locations, CDR awarded the impact assessment to Consultant Rafic Khoury who started his work during the third quarter of 2003. The Consultant prepared the environmental impact assessment of the locations identified by the technical committee commissioned with this task.

**The comprehensive Household Solid Waste Management Plan:** CDR established a comprehensive plan which was approved by the Council of Ministers in 2006. It is based on the following principles:

1 - Recycling and composting to the greatest extent in order to reduce the quantity of dumped waste; and distribution of recycling, sorting and composting plants on all cazas, with one or more sanitary landfills in each service area.

2 - For this purpose, Lebanon shall be divided into four service areas:

- The North and Akkar governorates
- The Bekaa and Baalbeck-Hermel governorates
- The South and Nabatiyeh governorates
- Mount Lebanon and Beirut governorates

3 - Create an incentive for the municipalities that will host sorting stations, composting plants, sanitary landfills or incinerator centers. These municipalities will be paid a certain amount per every ton of solid waste, as proposed in the plan and according to laws and decrees that will be issued in this respect.

4 - Sweeping, collection and transport of waste to sorting stations and composting plants shall be handled by the municipalities at their own expense.

5 - The contractor shall be responsible for financing the relevant study, executing and preparing the sanitary landfills,

incinerator centers, sorting stations and composting plants. The contractor shall also be charged with the management of these facilities for ten years on the basis of a certain fee per each ton of transported and treated waste.

Maritime and back-filling works in Saida waste mountain area: the Council of Ministers issued Decision No. 37, dated 26/5/2009, directing CDR to prepare the necessary studies and draft decrees required, and to implement the maritime and back-filling works in Saida waste mountain area, to be funded through the US\$ 20 million grant donated by the Kingdom of Saudi Arabia, the rest of the cost being financed by the Lebanese government.

### **Progress, during 2013, in contracts awarded before 2013:**

The Council of Ministers issued Decision No. 45, dated 30/12/2008, to continue the payment of dues belonging to the companies handling all types of waste-related works, in some regions and municipalities, from the Autonomous Municipal Fund according to the rules and procedures followed in making payments due to each company, until the approval and implementation of the solid waste management plan and its funding mode.

By virtue of Decision No. 34, dated 6/4/2010, the expansion of Naameh landfill was linked to the decision concerning the solid

waste management plan subject of the Council of Ministers Decision No.1 dated 30/3/2010. The emphasis was also placed on the implementation of Decree No. 9093 dated 15/10/2002 (amendment to Article 11 of Decree 1917 dated 6/4/1979) which stipulates that each municipality establishing a sanitary landfill or a plant for treating its waste on its territory shall benefit from increased proceeds from the Autonomous Municipal Fund equivalent to five times their share, and that each municipality establishing a sanitary landfill or a waste management plant on its territory for at least 10 municipalities, shall benefit from increased proceeds from the Autonomous Municipal Fund equal to ten times their share.

It has also been decided to extend the current household waste sweeping, collection, treatment and landfill contracts in Greater Beirut and some neighboring areas, signed with Averda Group. It also included the extension of Lacico's advisory contract until the start of the implementation of the solid waste management plan, provided that the extension period doesn't exceed 4 years, ending at latest on 17/1/2015, and provided that the contractor and the consultant are notified of the extension end date at least six months before.

Pursuant to the General Secretariat of the Council of Ministers' letter No. 2067/ms dated 13/9/2010, CDR prepared a comparison table between the prices adopted in the Verda Group

contracts and those adopted in similar contracts in Lebanon and some European or American cities or countries. It also discussed the possibility of canceling the sorting and composting processes from the contracts and the saving that can be achieved by doing it. Furthermore, it provided an explanation for the components and items included in the price of one ton of solid waste as adopted in such contracts.

**Operation contracts:** CDR signed a contract with SUKLEEN for the collection of household solid waste and street sweeping in Greater Beirut and some areas of Mount Lebanon. Commissioned to implement the urgent plan for Greater Beirut, it also signed two contracts with SUKOMI for operation of the Amrousieh and Quarantina solid waste treatment plants and the Coral composting plant, as well as the construction and operation of Naameh and Bsalim sanitary landfills. Currently, CDR is commissioned to launch a new international tender for solid waste treatment and landfills, provided that contracts with SUKOMI are terminated within the periods specified in the agreements, and that such termination does not occur before the new contractor(s) takes over.

The works are currently progressing within the framework of the Emergency Plan for Greater Beirut. After fully utilizing cells (1) and (2) of the Naameh sanitary landfill site, which cover an area of 120,000 m<sup>2</sup> with a combined capacity of two million tons of

waste, an additional area of 62,000 m<sup>2</sup> was prepared for a new cell (3). The latter is currently being used as a sanitary landfill for the solid waste produced by Greater Beirut and some areas in Mount Lebanon. Due to the necessity of continuing to use this sanitary landfill until the alternative location designated in the SWEMP project is ready, the Council of Ministers approved, under Decision No.1 of 28/6/2006, the expropriation of an additional area of about 25,000 m<sup>2</sup> for expanding this landfill. Even though the expropriation was then implemented in order to ensure the landfill's continued use for three additional years, to allow the invitation to a new tender in implementation of the waste management plan, and select new contractors to implement it, and adopt new treatment centers and landfills in the sites identified in it.

Moreover, sweeping, collection, landfill and treatment contracts were extended for 3 years, ending on 10/11/2010, under the same conditions, in order to ensure continuity of work in solid waste facilities, by virtue of Decision No. 88 dated 10/11/2007.

Also, in accordance with the above-mentioned Decision of the Council of Ministers, the CDR expanded the Naameh sanitary landfill to raise its capacity until 17/1/2015, without making any additional expropriations.

**Operation of Tripoli dumpsite:** After releasing an international call for tenders in 1999, the CDR signed a contract with BATCO for

the operation of Tripoli dumpsite. This contract, which is renewable annually, is financed by the Al-Fayha Union of Municipalities. The contract aims to treat solid waste by using appropriate sanitary dumping methods, extraction of generated gas and incineration. In this connection, the Council of Ministers issued Decision No. 28, dated 17/7/2003, charging the CDR with the development of a study for expanding Tripoli dumpsite and extending the period of its use. After submitting to the Council of Ministers the study prepared by Dar al Handassa (Nazih Taleb) related to the construction of a sorting and composting plant on plots No. 812,815 and 1123 adjacent to the dumpsite (total area of around 13000 m<sup>2</sup>) and expansion of dumpsite capacity by constructing a 9-10m high Gabion reinforced wall around its perimeter in order to be able to fill the spaces between this wall and the present dumpsite, the Council of Ministers approved, in its Decision No. 41 dated 18/2/2005, to include within the 2005 general budget and its annexes a draft law for projects amounting to US\$ 12 million, distributed over five years, to cover the cost of expanding and operating the sanitary dumpsite. The landfill was expanded by raising the height of the wall by a further 3 meters. The landfill is still operated until an alternative location is found.

**Operation of Zahleh Sanitary landfill:** In December 2001, the CDR signed a contract with SERDIM/SCS to operate the new

sanitary landfill in Zahleh and to transfer the contents of the old uncontrolled dumpsite to the new landfill. The two-year contract was financed by the World Bank within the framework of SWEMP. Upon expiry, the Council of Ministers approved, in its Decision No. 70 dated 12/2/2004, the extension of Zahleh landfill operation and supervision contract for three additional years ending on 31/12/2006, to be funded out of the general budget.

Zahleh landfill and treatment plant with associated equipment are the property of Zahleh municipality. Both were supplied recently with the necessary equipment, financed by USAID. The Council of Ministers Decision No. 62 dated 21/5/2007, concerning the delivery of the landfill and the transfer of its operation to Zahle-Maalaka municipality, was issued as an encouragement for this municipality to take over its operation in the future and to initiate other municipalities to do the same.

**Normandy dumpsite:** The Normandy uncontrolled dumpsite on the seashore is located within the premises of Beirut Central District (BCD) reconstruction and development plan awarded by the government to Solidere. The project includes sorting and treating of existing waste and recovery of suitable materials to be used for back-filling a reclaimed area. The project cost amounts to US\$ 61 million, including supervision. A technical consultant has been appointed to supervise this project. It should be noted that 80% of the works have

been completed while the remaining 20% are suspended at present awaiting the results of negotiations and arbitration between Solidere and the contractor. The current work plan will be directed toward studying and rehabilitating the reclaimed areas in preparation for the design and implementation of infrastructure works. The dumpsite treatment project is expected to be complete within three years, including the infrastructure studies and designs.

**Preparing tender documents for solid waste collection, sweeping, treatment and landfills for a period of ten years in all Lebanese regions:** CDR signed a contract on 3/10/2003 with Fichtner Consultants to provide consultancy services for this project. The Lebanese regions were divided into four service areas (Beirut and Mount Lebanon, the North and Akkar, the South and Nabatiyeh, Beka'a and Baalbeck-Hermel). After completing the tender documents in November 2003, and issuing the Council of Ministers Decision No. 68, dated 20/5/2004, the basic tender documents were amended to cover new instructions that require contractors to include in their offers the methods and means to be adopted for disposal of solid waste. At that time, the Ministries of Environment and the Interior and Municipalities had some comments on the Tender Terms and Conditions. Subsequently, the Council of Ministers issued Decision No. 1, dated 28/6/2006, approving CDR's proposed plan (June 2006)

for household solid waste management.

Maritime works project for the preservation of Saida waste mountain area: the main element of this project is the construction of a seawall stretching from the landfill site to the wastewater treatment plant, in order to protect the current landfill, in addition to back-filling the water area between the seawall and the shore. The back-filling works will result in the creation of a new reclaimed area that can be invested in various environmental activities, including the second phase of the wastewater treatment plant for the city and its environs. A part of it can also be invested in the Saida port to be built in the region.

As a result of a tender, CDR awarded on 19/8/2010 the implementation of the project to Khoury Contracting Company, to carry out the maritime works intended to protect Saida waste mountain area.

### **Projects under preparation (2013-2015 period)**

The Council of Ministers issued Decision 55 (dated 1/9/2010) to approve the recommendations of the inter-ministerial committee mandated by Council of Ministers Decision 1 (dated 30/3/2010). These recommendations suggested a) the adoption of a new plan for solid waste management in all Lebanese regions, through the adoption of thermal decomposition and waste-to-energy technologies in large cities, and b) the renewal of the commitment to the 2006 master plan in the rest of the

country, while also exploring the feasibility of adopting thermal decomposition. CDR and MoE were mandated to put this plan in place.

In accordance with the Council of Ministers' Decision No. 55 of 1/9/2010, the CDR – after the release of a call for tenders to generate offers from international consulting firms - signed a contract with the international consulting company Ramboll (Danish company) to conduct the necessary studies related to the implementation of the new plan. Ramboll completed the tasks prescribed in the first stage of the contract and submitted all the studies that were requested in relation to thermal decomposition and waste-to-energy technologies in the large Lebanese cities.

On 9/1/2013 the Council of Ministers in Article (B) of Clause (2) of decision 52, approved to mandate the elaboration of the terms of reference related to household solid waste in all Lebanese regions, to an inter-ministerial committee presided by the Deputy Prime Minister and composed of the Ministers of Finance, Tourism, Environment, Interior & Municipalities and Communications, and the Minister of State Marwan Kheir El Din and the president of the Council for Reconstruction and Development.

On 25/1/2013, a meeting took place at the Grand Serail in the presence of the members of the inter-ministerial committee formed by Council of Minister's decision 52 of 9/1/2013. In this meeting, the CDR, the Ministry of Environment and the Ministry of

Interior & Municipalities, were mandated to formulate the new plan for solid waste management in all Lebanese regions in accordance with Decision 55 (dated 1/9/2010) issued by the Council of Ministers.

On 28/2/2013, the sub-committee, commissioned by the above-mentioned inter-ministerial committee, submitted to the president of the inter-ministerial committee a comprehensive national plan for solid waste management in all Lebanese regions. This plan was formulated based on the study conducted by Ramboll and on the Council of Ministers' decision 55 of 1/9/2010, and included the adoption of thermal decomposition and waste-to-energy technologies in large cities and the renewal of commitment to the 2006 solid waste management plan in the rest of the county.

The inter-ministerial committee formed by Council of Ministers' decision 52 of 9/1/2013, submitted to the Council of Ministers in March 2013, a suggestion to adopt an alternative plan for solid waste treatment based on thermal decomposition. This plan was not however presented to the Council of Ministers due to the resignation of the Government.

On 17/1/2014, residents and environmental activists held a protest and blocked the road leading to Naameh landfill. The trucks of the contractor Sokom-International Sokomi were prevented from entering the landfill. This situation lasted until 19/1/2014 at night. Sukleen was unable to lift, collect and dispose



trash of 293 municipalities in Beirut and Mount Lebanon, which caused waste to pile up in the streets during this period.

The protest was held again from 21/1/2014 to 24/1/2014 and caused trash to re-accumulate in the streets.

To resolve this issue, the Minister of Interior & Municipalities met on 19/1/2014 with the protestor’s delegates and came up with the following recommendations:

- 1 - To request from CDR to hire a subject-matter consultant to assess the impact of the landfill activity on public health;
- 2 - To work immediately on providing 60,000 m2 of lands to compost organic waste and send only non-decomposable material to Bssalim landfill, according to the initial plan,
- 3 - To urge the new government to dedicate high priority to complete and implement the Comprehensive Solid Waste Plan.
- 4 - To request MoEW and CDR to

take such necessary measures as to provide municipalities surrounding Naameh landfill with electricity generated from dumping activities.

- 5 - Request MoF, MoIM and CDR to set a mechanism and calculate the retroactive incentives payable to concerned municipalities back to 2008.

The Public Works, Energy and Water and the Environment parliamentary committees held a joint session on 23/1/2014 to discuss the issue of waste, and came up with recommendations suggesting the closure of Naameh landfill on 17/1/2015 and the need to expedite incentives payment.

**Awarding Construction and operation of waste treatment plants and sanitary landfills in all regions:** In response to the Council of Ministers decisions commissioning CDR to release an international call for tenders for the construction and operation of treatment plants and sanitary landfills in all Lebanese regions,

the CDR will award these contracts based on the final bid technical specifications.

**Awarding Supervision of construction and operation of treatment and sanitary landfill sites:** The contracts for the construction and operation of treatment plants and sanitary landfills in all Lebanese regions are expected to be awarded simultaneously with the related supervision contracts.

CDR will continue to fulfill the duties entrusted to him by the Council of Ministers in terms of monitoring the implementation of ongoing contracts with companies handling all kinds of waste-related works; conducting periodical reviews of projects under implementation, and realizing performance evaluation assessments of adopted methods, as well as coordinating with concerned ministries and providing help in accordance with the provisions of the Solid Waste Law.

**Waste sorting at Naameh landfill**

**Proportion of organic solid waste in Greater Beirut and in Lebanon**

