



Lebanon: the state of waste

A research piece for the Heinrich Boel Stiftung

by

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Introduction

A visitor to Beirut is likely to experience the foul stench of the Burj Hammoud landfill at least once. Residents living in a three kilometer radius of the site are exposed to more than three times the normal dose of the malodorous compound hydrogen sulfide, the American University of Beirut's Nature Conservation Center demonstrated in February this year [Figure I].¹ Prolonged low level exposure to the gas - which smells of rotten eggs - can lead to "eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances and weight loss."² The stench is one of the more superficial products of Lebanon's seeming inability to sustainably treat its own waste, which has also resulted in a string of environmental and humanitarian violations including widespread waste burning in the country's poorer regions.

Lebanese residents are no longer able to ignore the waste around them. Sociologist John Scanlan has observed that below the ordered and familiar topography of the city exists a "shadow counterpart" which we rarely think about. This unwelcome shadow "resists our attempts to disconnect from it."³ The garbage crisis of 2015 exposed this jarring disconnect between the two topographies and along with it, the failure of politicians to provide basic utilities including waste collection and treatment. Since then, Lebanon's management of waste has received greater scrutiny; and yet the country continues to landfill and dump around 75 percent of its refuse. With waste production in the Middle East set to double by 2050, it is clear that Lebanon must break free of the cycle of emergency waste plans it has relied on since the civil war, as soon as possible.

This paper will outline the causes and repercussions of the 2015 garbage crisis, examine data on Lebanon's solid waste management (SWM) and critique the Environment Ministry's most recent plans to handle the country's solid waste.

¹ ليلي جرجس, غاز كريبه الرائحة H2S في برج حمود... ما اكتشفته جريدة النهار يستدعي القلق! 1 March, 2019, <https://www.beirutobserver.com/2019/03/89222/>

² United States Department of Labor's Occupational Safety and Health Administration, Hydrogen sulfide factsheet, October 2005, https://www.osha.gov/OshDoc/data_Hurricane_Facts/hydrogen_sulfide_fact.pdf

³ Scanlan, John, On Garbage, Reaktion Books Ltd, 2005, p155

I - You Stink! How 2015 became the year of the garbage crisis

The 2015 garbage crisis was a watershed moment for many living in Lebanon. For eight months, citizens were forced to encounter their own waste in nauseating proximity and quantity. Around 20,000 tonnes of putrid waste gathered in Beirut's streets at the height of summer, in some places standing seven meters tall.⁴

"Long trails of bursting, leaking bin bags lined the streets, the smell of their decomposing contents only made worse by the overbearing July heat."⁵

Andrew Arsan: A Country in Fragments

But the piles of rotting trash in the country's capital and Mount Lebanon represented something even more malignant: the political class's prevarication, self interest and disregard for providing the most basic services for its citizens. Citizens' discontent at the central government's failure to provide waste collection and treatment birthed dozens of civil society movements including Beirut Madinati⁶ - Beirut My City - many of whom rallied under the aptly chosen banner: *Tal'it Rihatikum*, or You Stink. Historian Ziad Abu Rish has described the ensuing protests, which merged with protests against a number of other public utility crises, as the largest protest not to be organised by a political party for decades.⁷

But, as some observers have pointed out, this was not Lebanon's first trash crisis. Some compared July 2015 to the desperate times of the Lebanese Civil War, where in parts of the country rubbish was openly dumped or burned by communities when the wind was blowing away from their houses.

⁴ Nagle, John, *Social Movements in Violently Divided Societies: Constructing Conflict and Peacebuilding*, Routledge, 2016, p1

⁵ Arsan, Andrew, *Lebanon: A Country in Fragments*, p369

⁶ According to Beirut Madinati's website, the organization "does not have a specific founder, but rather, the movement is a collective initiative founded by many local individuals, mainly academics and activists of Beirut." <https://civilsociety-centre.org/party/beirut-madinati>

⁷ Ziad Abu Rish speaks on "Voices of the Middle East and North Africa" podcast, 2016 <https://soundcloud.com/vomekpf-1/a-perfect-metaphor-the-trash-crisis-in-lebanon-an-interview-with-ziad-abu-rish>

“There was no collection in the south. In the villages, every two to three houses would get together and dig a hole in the ground and burn their trash there,”

Resident of Lebanon’s south during the Lebanese Civil War⁸

Historian Andrew Arsan has observed that the 2015 garbage crisis had its roots in a kind of “political thinking” bred by the civil war, while Sami Atallah, Executive Director of the Lebanese Center for Policy Studies, has pointed the finger specifically at the period of rampant privatisation during the 1990s. Atallah’s argument will be explored in this chapter, which aims to address two major causes of the 2015 crisis: the mismanagement of private waste management contracts and the closure of the Naameh landfill.

Costly Privatisation

Rubbish collection and treatment in Lebanon is big business. Although the profit margins of Averda - the company which monopolised waste management in the decade leading up to the garbage crisis - have never been shared, by many estimates the Lebanese state was paying one of the highest bills in the world for waste collection and treatment in 2015. In 1994, the private waste management company Sukleen - a part of the Averda group - was granted the contract for garbage collection and street-cleaning in Beirut by former Prime Minister Rafic Hariri’s government. Averda’s chairman, Lebanese businessman Maysarah Khalil Sukkar, had close ties with Hariri.⁹ In 1998, Sukleen’s sister company Sukomi began managing Naameh landfill, a newly created ‘temporary’ landfill established by then-Environment Minister Akram Chehayeb as part of his emergency plan for Beirut and Mount Lebanon. The decision to privatise waste collection in Beirut was in part due to post-war cabinets’ lack of trust in a public sector decimated by the civil war.¹⁰

Privatisation proved to be less cost-efficient than its proponents had claimed. Averda’s original contract in 1993 was worth \$3.6 million per year.¹¹ However, by 2015, the Lebanese state was paying Averda between \$142 and \$153 million per year, according to an infographic from Averda seen by

⁸ Haines-Young, James, “Lebanon’s rubbish crisis, 40 years in the making,” Middle East Eye, August 6, 2015 <https://www.middleeasteye.net/news/lebanons-rubbish-crisis-40-years-making>

⁹ Averda: la fin d’un juteux monopole?, Le Commerce du Levant, April 30 2015, <https://www.lecommercedulevant.com/article/24799-averda-la-fin-dun-juteux-monopole->

¹⁰ Arsan, Andrew, Lebanon: A Country in Fragments, p373

¹¹ Nash, Matt, Cleaning Up, Executive Magazine, <https://www.executive-magazine.com/economics-policy/waste-management-cleaning-up>

Executive Magazine.¹² This increase was not proportional to the company's expanding remit. The cost of solid waste collection between 2002 and 2015 increased in real terms at an average of 5 percent.¹³

"Furthermore, the contracting was devoid of any competitive bidding and the details of the contract remain confidential. Consequently, Lebanese pay one of the highest costs per tonne for garbage collection in the world."

Sami Atallah, Garbage Crisis: Setting the Record Straight.¹⁴

One Environment Ministry source put Averda's fee in 2015 at \$140 per ton, which some observed was the highest rate in the world. Averda charged \$45 for dumping alone, compared to the global average of \$11.¹⁵ Furthermore, the government's colossal contract with Averda only served two of Lebanon's eight governorates, meaning that waste management was only ever partially privatised. In 2004, Environment Minister Wiam Wahhab was "astonished" that Sukleen and Sukomi's collection and treatment of a tonne of Beirut rubbish was \$100 more than the same service in Zahle. Municipalities in other areas were left to devise strategies and pay for their own solid waste management out of their own budgets and with no central oversight or guidance, while the state spent enormous sums on Beirut and Mount Lebanon Governorate.

Lebanon's municipalities suffered a further injustice with the passing of Decree 3038 in 2000. The decree permitted Cabinet to spend money from the Independent Municipalities Fund (IMF) - a funding pot for all municipalities - on private waste management contracts which only benefited certain municipalities. The Court of Accounts ruled the amendment illegal. Atallah pointed out in an essay written at the time of the 2015 garbage crisis that the decree paved the way for Budget Law 326 which allowed the government to charge municipalities benefiting from solid waste collection services 40% of their IMF share.

¹² Ibid.

¹³ <http://www.lcps-lebanon.org/featuredArticle.php?id=48>

¹⁴ Ibid.

¹⁵ Arsan, Andrew, Lebanon: A Country in Fragments, p373

“What is strange is that the 40% of a municipality’s IMF share has no bearing on the actual cost of collecting garbage for that municipality. In other words, citizens do not know whether the cost charged to municipalities is more or less or equal to how much it is actually costing the government.”

***Sami Atallah, Garbage Crisis: Setting the Record Straight.*¹⁶**

According to Atallah, money collected from the IMF in 2009 only covered 22% of the actual cost of collecting waste. The Finance Ministry told Atallah that the remaining 78% was covered by the Council for Development and Reconstruction (CDR) who registered it as debt for municipalities.¹⁷ Therefore municipalities were not being told the real cost of the service and were also accumulating debt on a service they did not ask for, concluded Atallah. By 2015, municipalities were subsidising the state’s dysfunctional arrangements with the private sector.¹⁸

Naameh: a timebomb

One reason for the expanding remit of Averda’s contract was the increasing reliance on the Naameh landfill between 1997 and 2015. Naameh was only ever intended as an emergency solution to solid waste management, but its lifetime - for reasons discussed in this section - was repeatedly extended, stoking public anger and eventually leading to the protests which closed the site down on July 17, 2015.

Naameh itself was created in response to the closure of the infamous 50-meter high Burj Hammoud landfill, one of Beirut’s two main civil war dumpsites. After Burj Hammoud landfill’s closure in 1997, Environment Minister Akram Chehayeb was forced to look for alternatives to deal with waste from the Greater Beirut Area. Initially, the minister planned to rehabilitate old waste incinerators in Beirut’s Karantina and in the southern suburb of Amrousieh. However, in June that year, angry residents of Amrousieh burned down the antiquated incinerator, claiming the government had ignored the health and environmental impact of its emissions for years.¹⁹ In response, Chehayeb devised an emergency plan for the Greater Beirut Area which established a sanitary landfill in the village of Naameh some 20

¹⁶ Atallah, Sami, Garbage Crisis: Setting the Record Straight <http://www.lcps-lebanon.org/featuredArticle.php?id=48>

¹⁷ Ibid.

¹⁸ Arsan, Andrew, Lebanon: A Country in Fragments, p378

¹⁹ Alfa, Nadine, “Green Issues take Center Stage,” The Daily Star, December 27 1997, <http://www.dailystar.com.lb/News/Lebanon-News/1997/Dec-27/15330-green-issues-take-the-centre-stage.ashx>

kilometers south of Beirut located on the site of a former quarry.²⁰ It would only be operational for ten years and would receive no more than two million tonnes of waste, Chehayeb said at the time.²¹ Eighteen years later, the landfill held 15 million tonnes of waste, rendering the once-sanitary landfill an uncontrolled dump with serious health impacts on local residents.

Environmental activists claimed that Sukomi had neglected its contractual obligation to sort waste upon its arrival on site and failed to install adequate drainage pipes to deal with the 1,200 cubic meters of methane produced every hour.²² Many who lived in Naameh alleged that Sukomi burned some of its rubbish and that the landfill emitted leachate - a toxic outflow - into the soil, causing illness.

“No peer-reviewed studies have been published about the health hazard, but Dr. Amin al Kazzi, a physician at the nearby Damour Medical Center, conducted his own examination and found that incidences of blood cancer among residents of the area is four times greater than the baseline.”

Issa Philip, The Daily Star²³

The first protests calling for Naameh’s closure came in 1998 - almost two decades before the garbage crisis.²⁴ Public anger grew considerably in 2008 - the year Chehayeb had promised the site would close - after the government granted the facility a three-year extension. Another three-year extension was granted in 2011. In January 2014, protesters began a sit-in which closed the landfill for a week.²⁵ Politicians failed to respond to locals’ complaints with policies - instead, on January 25, police raided the site and removed tents erected by protesters.²⁶

²⁰ Assaf, Layla, “Naameh landfill gets first covering of vegetation,” The Daily Star, June 3, 2003
<http://ftp.dailystar.com.lb/News/Lebanon-News/2003/Jun-03/38743-naameh-landfill-gets-first-covering-of-vegetation.ashx>

²¹ Koussa, Victoria, “La déchetterie de Naamé, « une fabrique à cancers » pour ses habitants,” L’Orient Le Jour, July 14, 2015
<https://www.lorientlejour.com/article/934360/la-dechetterie-de-naame-une-fabrique-a-cancers-pour-ses-habitants.html>

²² Arsan, Andrew, Lebanon: A Country in Fragments, p374

²³ Issa, Philip, “Naameh residents gear up for showdown over landfill,” The Daily Star, July 16 2015
<http://www.dailystar.com.lb/News/Lebanon-News/2015/Jul-16/306880-naameh-residents-gear-up-for-showdown-over-landfill.ashx>

²⁴ لدينا فخرالدين, مطمر النّاعمة: وفاة من دون شهادة, Legal Agenda, June 25 2018
<https://www.legal-agenda.com/article.php?id=4600>

²⁵ Arsan, Andrew, Lebanon: A Country in Fragments, p375

²⁶ El-Hassan, Jana and Knutsnel, Elisa, Sit-in at Naameh landfill suspended after crackdown, The Daily Star
<http://www1.dailystar.com.lb/News/Lebanon-News/2014/Jan-25/245243-sit-in-at-naameh-landfill-suspended-after-crackdown.ashx>

“Ajwad Ayyash, an activist, was detained at 8:05 a.m. and released several hours later. Earlier in the day, some 300 police officers had descended upon the demonstration, activist Ragheda al-Halabi told The Daily Star.”

*El Hassan and Knutsnel, The Daily Star*²⁷

The protesters demanded that Naameh landfill close for good before January the following year. When the date approached, Environment Minister Mohammad Machnouk announced that he had renewed the landfill's life and Sukleen's contract for another six months, citing the need to implement a national plan for waste management.²⁸ Cabinet promised that Naameh would close by July 17 2015. As the date approached, municipalities voiced their concern that the government had not taken “serious steps” to find solutions to the country's waste management.²⁹ On July 17, protesters blocked the site's entrance, closing the landfill and causing the 2015 garbage crisis.

Politicians scramble

Behind the scenes, the government was struggling to attract bidders for a newly created operating region: Beirut and its immediate suburbs. In January 2015, the Council for Development and Reconstruction (CDR) had put out to tender the contract for waste treatment in six operating regions. Three of these were newly created, slicing up Averda's previous area of operations: Beirut and its immediate suburbs; the Matn, Kesrouan, and Jbeil; Baabda, Aley, and the Chouf; the Bekaa; the north; and the south.³⁰ Previously, Beirut and Mount Lebanon had been kept together as one service zone. The winning bids were set to be announced in April 2015. Machnouk promised “fierce competition” between waste management companies, claiming that political connections would not play a role in the awarding of the contract. Sukleen, the company which had managed waste treatment since 1994, would have no advantage in the call for tenders, Machnouk argued.”³¹

Bidders had to conform to stringent technical and financial conditions, Bassam Farhat - the CDR official in charge of waste management at the time - told Executive Magazine. Each sanitary landfill

²⁷ Ibid.

²⁸ Arsan, Andrew, Lebanon: A Country in Fragments, p376

²⁹ Issa, Philip, Municipalities doubt promises to shut down Naameh landfill, July 8 2015, <http://www.dailystar.com.lb/News/Lebanon-News/2015/Jul-08/305641-municipalities-doubt-promises-to-shut-down-naameh-landfill.ashx>

³⁰ Arsan, Andrew, Lebanon: A Country in Fragments, p378/9

³¹ The Daily Star, Lebanon to Revamp waste sector: Environment Minister, October 31 2014 <https://www.dailystar.com.lb/News/Lebanon-News/2014/Oct-31/276069-naameh-dump-to-be-shut-in-6-months-machnouk.ashx>

would not be allowed to landfill more than 40 percent of the waste it handled in the first three years and “in years four through seven, it can only landfill up to 25 percent of the waste.”³² To be considered in Beirut, bidders must also have a minimum annual turnover of \$80 million. The unrealistic conditions seemed to put off applicants; by the bidding deadline in April 2015, Beirut had received no bids. The CDR received three bids for Matn, Kesrouan and Jbeil and only one for Baabda, Aley and the Chouf. The deadline was extended until July 15, two days before the expiry of Averda’s contract.³³ Once again no company came forward in the face of this impossible deadline, and so the waste began to pile up on July 17.

Inscrutable interests

Accusations flew in response to the seemingly incompetent handling of the contract awarding process. Farhat described the apparent incompetence as the product of a “political decision.”

“Asked if that meant it was flawed or ignored advice from agencies like CDR and the Ministry of Environment — which developed past draft strategies — he said the cabinet had all of the relevant information needed to make the best decision but “in the end, it was their decision.”

Bassam Farhat, interviewed by Executive Magazine.³⁴

Riad al-Assad, head of South for Construction, one of the few companies to submit a bid to the CDR in 2015, complained that the tenders had been rigged in order to keep the incumbent in place.³⁵ One thing was clear: the contract process had either been bungled, or deliberately rigged, from start to finish. It would perhaps come as no surprise that on July 29, Beirut’s governor Ziad Chebib announced that once again Sukleen would be called upon to collect the 5,000 tonnes of garbage rotting on the capital’s streets.

Almost a year after the crisis, the government announced which companies would treat waste in Beirut and its immediate suburbs. A crisis response plan was unveiled in March: the Naameh Dump

³² Nash, Matt, Cleaning Up, Executive Magazine, March 24 2015, <https://www.executive-magazine.com/economics-policy/waste-management-cleaning-up>

³³ Arsan, Andrew, Lebanon: A Country in Fragments, p379

³⁴ Nash, Matt, Cleaning Up, Executive Magazine, March 24 2015 <https://www.executive-magazine.com/economics-policy/waste-management-cleaning-up>

³⁵ Nash, Matt, Waste [mis]management, Executive Magazine, September 1 2015, <https://www.executive-magazine.com/special-report/wastemismmanagement>

would be reopened for two months and new “temporary” landfills would be established in Costa Brava and Burj Hammoud - east and south of Beirut respectively. But tenders for the two new landfills were delayed, causing rubbish to pile up in two parking lots near Costa Brava and Burj Hammoud. The last of this putrid trash was finally removed from the car park adjacent to the Burj Hammoud landfill in February 2019. According to a statement from the neighborhood’s municipality, the 350,000 tonnes of trash had gathered over a mere five weeks in the summer of 2016.³⁶ Finally, on June 29, 2016, the CDR announced it had accepted a bid from Khoury Contracting Co.³⁷ to handle the new Burj Hammoud landfill. At \$109 million, CDR described the bid as “the lowest price” submitted.³⁸ The contract for Costa Brava was awarded to Al-Jihad Group for Commerce and Contracting at \$59.5 million in late July. Six companies had made offers including Khoury Contracting Co.³⁹

But once again, the bidding process was hardly a transparent one. In early June, the Future Movement-controlled Interior Ministry requested the CDR not to disclose the result of the bidding. No clear reason for the request was ever established; while the Interior Ministry claimed that Burj Hammoud municipality had called for nondisclosure, others said it originated from Beirut Governor Ziad Chebib, an allegation Chebib denied.⁴⁰ Meanwhile the CDR awarded the contract to Al-Jihad Group for Commerce and Contracting twice; the first time, it reversed its decision, citing high costs, only to accept another offer from the same company at a supposedly lower price. It is likely that, in both cases, the reasons behind these two events will remain obscure.

Similarly obscure are the exact vested interests involved in the awarding of contracts to Khoury Contracting Co. and Al-Jihad Group for Commerce and Contracting. Many civil rights groups have speculated that politicians procrastinated in issuing the contracts because they sought to make profit out of the deal. Both contracts, including how much the government pays to landfill waste per tonne,

³⁶ الوكالة الوطنية للإعلام, بيان من رئيس بلدية برج حمود, February 5 2019

<http://nna-leb.gov.lb/ar/show-news/390396/nna-leb.gov.lb/ar>

³⁷ «عرقلة» مناقصة مطمر الكوستابرافا, صحيفة الأخبار, June 29, 2016 https://www.al-akhbar.com/PDF_Files/2923/pdf/p09_20160629.pdf

³⁸ The Daily Star, Agency greenlights Burj Hammoud landfill construction, June 29, 2016, http://www.dailystar.com.lb/News/Lebanon-News/2016/Jun-29/359730-agency-greenlights-burj-hammoud-landfill-construction.ashx?utm_source=Magnet%26utm_medium=Entity%20page%26utm_campaign=Magnet%20tools

³⁹ Hydromar – Mouawad Group, Hanna Khoury & Bros. S.A.R.L., A. R. Hourie Enterprises, Hicon Group – Milad Abou Rjeily, Al Jihad Group for Commerce and Contracting, and Khoury Contracting Co.

⁴⁰ The Daily Star, Mystery surrounds request for secrecy on landfill tenders, June 9, 2016, <http://www-proxy.dailystar.com.lb/News/Lebanon-News/2016/Jun-09/356047-mystery-surrounds-request-for-secrecy-on-landfill-tenders.ashx>

have been kept strictly under lock and key. In an overview of the council's activities published in 2017, the CDR references the Burj Hammoud contract only briefly.⁴¹

In September 2017, Beirut municipality announced that a joint venture between the companies Ramco and Atlas, Lebanese and Turkish respectively, would take over waste collection in Beirut. Unsurprisingly, members of Beirut Madinati accused the municipality of being insufficiently transparent in providing information on the tenders. The civil society platform also argued that the municipality's announcement was premature since the Court of Audit had not yet issued a final decision regarding the tender.⁴² With Ramco and Atlas taking over waste collection in Beirut in May 2018, Averda's yearslong monopoly on waste collection and treatment was truly over. But it left behind a sector dominated by secret contracts, emergency plans and the inscrutable interests of politicians.

⁴¹ CDR, Report on CDR's activities 2017 http://www.cdr.gov.lb/695F9C03-6C7D-45F0-B343-E193212C913C/FinalDownload/DownloadId-EC30DD2F9157214C78F013115468BAED/695F9C03-6C7D-45F0-B343-E193212C913C/eng/progress_reports/pr102018/PReng.pdf

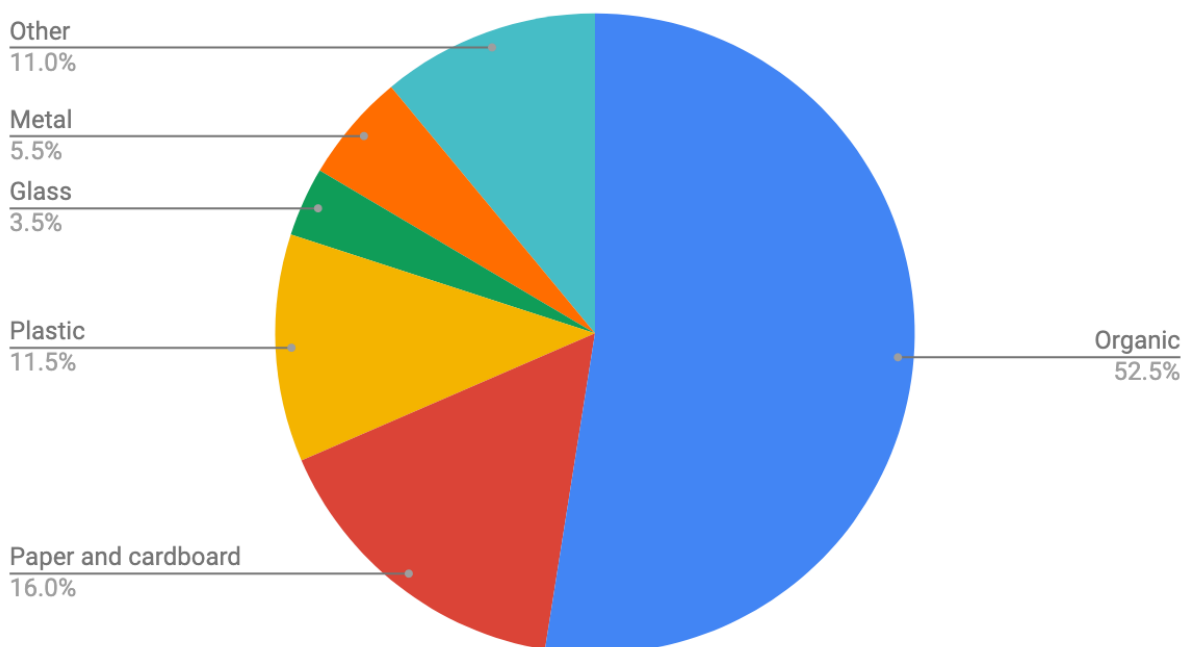
⁴² Marsi, Federica, Ramco to collect Beirut municipal waste, The Daily Star, September 16, 2017, <https://www.dailystar.com.lb/News/Lebanon-News/2017/Sep-16/419529-ramco-to-collect-beirut-municipal-waste.ashx>

II - Lebanon: the State of Waste

The problem of measuring municipal solid waste (MSW) in Lebanon

Recent figures on the composition and quantity of Lebanon’s municipal solid waste are lacking. According to a breakdown of waste presented at a Waste Management Expo organised by the Environment Ministry in April this year,⁴³ 52.5 percent of Lebanon’s municipal solid waste is organic and can be composted. Plastic accounts for roughly 11.5 percent of waste; paper and cardboard for 16 percent. The rest includes glass (3.5 percent) and metal (5.5 percent). This breakdown falls roughly in line with the World Bank’s global average for countries outside Europe, Central Asia, and North America.⁴⁴

Lebanon's SWM composition 2013 [Source: GIZ/SWEEP-Net, 2014]



⁴³ Boswall, Jacob, No easy solutions at Waste Management Expo, The Daily Star, April 12, 2019, <http://www.dailystar.com.lb/News/Lebanon-News/2019/Apr-12/480972-no-easy-solutions-at-waste-management-expo.ashx#>

⁴⁴ The World Bank, What a Waste 2.0, undated, http://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

But these figures are in fact more than four years old. For official purposes, the Environment Ministry still uses a survey published in 2014 carried out by the German development agency GIZ and the Solid Waste Exchange of Information and Expertise Network SWEEP-Net.⁴⁵

The survey states that Lebanon produced 2.04 million tonnes of MSW in 2013; this means that each person in Lebanon (excluding Syrian refugees and tourists) produced 1.05 kilograms of waste per day. MSW generation per capita varied from 0.7 kg/p/d in rural areas to between 0.85 and 1.1 kg/p/d in urban areas, the report states. Beirut and Mount Lebanon, a governorate which contains around half of the Lebanese population - almost 2 million Lebanese, in addition to 309,112 Syrian and Palestinian refugees⁴⁶ - creates 51 percent of Lebanon's MSW: 2850 tonnes daily.⁴⁷ South Lebanon and Nabatieh produces 18 percent, North Lebanon produces 18 percent and the Bekaa produces 11 percent. The report also forecast an increase of MSW generation per year of 1.65 percent.

Demographic changes have occurred in the intervening years, with a knock on effect on MSW. The report estimates that in 2013 alone, an additional 1,000 tonnes per day was produced by Syrian refugees alone, bringing the total to around 2.4 million tonnes per year. At the time of the report, the UN's refugee agency estimated that the number of Syrian refugees in Lebanon was a little over 1 million.⁴⁸ The government now puts that number at 1.5 million, although only around 1 million are registered with the UNHCR.

Therefore, Lebanon is in need of updated statistics on MSW. A European Union source recently observed that demographic shifts and changes in consumption have undoubtedly changed the quantity - and possibly the composition - of MSW in Lebanon. Environmentalists also believe that more accurate data would help move policy towards increased composting, noting that organic waste quantities may

⁴⁵ GIZ; SWEEP-Net, Country Report on solid waste management in Lebanon April 2014, <http://www.moe.gov.lb/getattachment/%D8%A7%D9%84%D8%AA%D9%88%D8%AC%D9%8A%D9%85%D8%A7%D9%84%D8%A8%D9%8A%D9%8A%D9%8A%D9%85%D8%B9%D9%84%D9%88%D9%85%D8%A7%D8%AA-%D9%88%D9%86%D8%B5%D8%A7%D9%8A%D8%AD-%D8%A8%D9%8A%D9%8A%D9%8A%D8%A9/%D9%82%D8%B7%D8%A7%D8%B9-%D8%A7%D9%84%D9%86%D9%81%D8%A7%D9%8A%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D9%86%D8%B2%D9%84%D9%8A%D8%A9-%D8%A7%D9%84%D8%B5%D9%84%D8%A8%D8%A9-%D9%81%D9%8A-%D9%84%D8%A8%D9%86%D8%A7%D9%86/2-LEBANON-COUNTRY-REPORT-ON-SWM-2014.pdf.aspx?lang=ar-LB>

⁴⁶ UNHCR, Lebanon: Beirut & Mount Lebanon Governorates Profile, Reliefweb, October 2018, https://reliefweb.int/sites/reliefweb.int/files/resources/Beirut_MtLebanon_G-Profile_181108.pdf

⁴⁷ GIZ; SWEEP-Net, Country Report on solid waste management in Lebanon April 2014,

⁴⁸ Dobbs, Leo, UNHCR The number of Syrian refugees in Lebanon passes the 1 million mark, April 3, 2014 <https://www.unhcr.org/news/latest/2014/4/533c1d5b9/number-syrian-refugees-lebanon-passes-1-million-mark.html>

be higher than 2013 figures suggest. The Delegation of the European Union to Lebanon was recently planning to implement a waste characterisation project for the Environment Ministry, but cancelled the project citing a need to ensure the sustainability of existing investments in the environmental field. A senior Environment Ministry source claimed that MSW in 2019 is roughly the same as it was in 2013, justifying the ministry's reliance on old data. The source added that the ministry is seeking to continue the EU's cancelled project. However, given recent cutbacks in the ministry's funding, it remains to be seen whether the project will go ahead.⁴⁹

Municipal solid waste (MSW) disposal

Before the 2015 waste crisis, Lebanon dumped 77 percent of its waste according to GIZ and SWEEP-Net's report.⁵⁰ Of this amount, the largest portion - 48 percent - was landfilled, the report stated. Twenty nine percent was openly dumped, 14 percent composted, and 8 percent recycled, the report stated. The low rate of composting is notable given Lebanon's high production of organic waste. In 2013 Lebanon's organic waste was roughly the same as that of a middle-income country, although the World Bank classifies Lebanon as an "Upper-middle income country."⁵¹ Lower income countries typically produce more organic waste than richer countries. Furthermore, environmentalists have suggested that the percentage of organic waste is in fact higher than the 2014 report suggests. The report's recycling figure may also be higher since it does not include the informal collection of valuable recyclables. Updated figures were included in the Environment Ministry's Policy Summary on Integrated Solid Waste Management, published in January 2018.⁵² The summary stated that 50 percent of waste is openly dumped, instead of 29 percent.

⁴⁹ Boswall, Jacob, Air-quality monitors first casualty of budget, The Daily Star, July 11, 2019 <https://www.dailystar.com.lb/News/Lebanon-News/2019/Jul-11/487291-air-quality-monitors-first-casualty-of-budget.ashx>

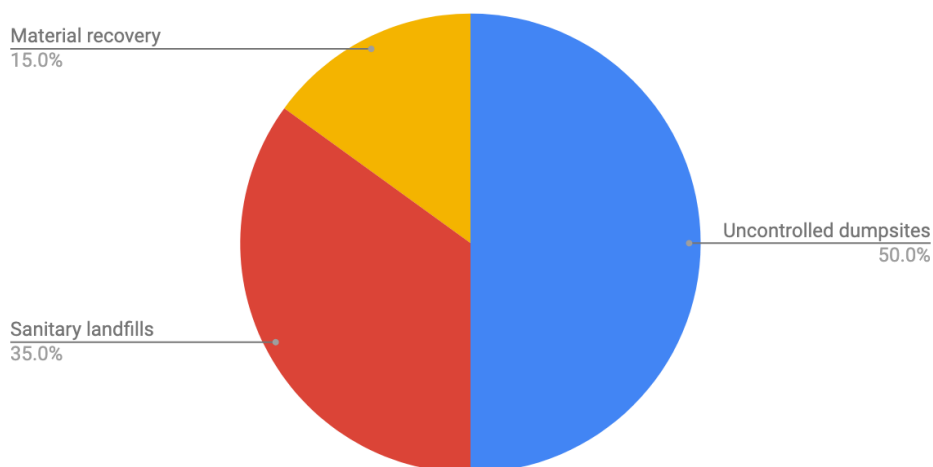
⁵⁰ GIZ; SWEEP-Net, Country Report on solid waste management in Lebanon, April 2014

⁵¹ Ibid.

⁵² Law Number 80 Integrated Solid Waste Management, January 11, 2018, <http://www.moe.gov.lb/getattachment/cca17155-ac13-4cf3-83c1-6c5baee40df4/Policy-Summary-for-Jan-2018.aspx>

The Environment Ministry does not give a source for these numbers, but adds that there are around 940 open dumpsites operating in Lebanon, many of which sprung up since the 2015 waste crisis (see Section II). Open dumpsites are any sites which do not fulfill technical specifications designed to separate waste and noxious byproducts, such as leachate, from the surrounding environment until the garbage becomes inert.⁵³

MSW disposal in Lebanon [Source: MoE's Policy Summary on Integrated Solid Waste Management, 2018]



The ministry stated that there are approximately 50 waste sorting facilities which constitute "material recovery," accounting for 15 percent of waste disposal.

"... (about 15 percent) undergo material recovery, sorted into recyclable or reuseable materials (paper and cardboard, plastic, metal, glass, etc.) or converted into organic soil enhancer/fertilizers in approximately 50 facilities across the Lebanese territories."

Environment Ministry, Law Number 80 Integrated Solid Waste Management

More recent information is available for the number and locations of constructed and planned waste treatment facilities across the country. A ten year "roadmap" submitted in June this year to a ministerial committee headed by Prime Minister Saad Hariri, includes a map of all waste treatment facilities in Lebanon. The map, dated May 28, 2019, was compiled by the United Nations Development Program and the Environment Ministry [Figure II].

⁵³ Azhari, Timor, Tackling the North's trash crisis, The Daily Star, July 15 2019, <http://www.dailystar.com.lb/GetArticleBody.aspx?id=487657&fromgoogle=1>

	Operational	Under construction	Constructed/planned in progress	Proposed in roadmap
Sanitary landfills	7	3	1	15
Landfills for bulky waste	0	0	0	1
Sorting	49	13	9	22
Composting	33	7	7	21
Autoclaving	3	0	0	0

Waste treatment facilities in Lebanon [Source: Environment Ministry's ten year "roadmap," submitted to ministerial committee June 3, 2019]

It is worth pointing out that two of Beirut and Mount Lebanon's main waste sorting plants - Karantina and Amroushieh - are running at between five and ten percent capacity.⁵⁴ MP Sami Gemayel has also criticised the running of the composting plant in Burj Hammoud, claiming that its operators sought to "bury 96 percent of trash in Burj Hammoud without recycling."⁵⁵

Given the prevalence of open dumping in Lebanon, the Environment Ministry says it will close open dumpsites and, in many cases, rehabilitate existing ones based on "priorities." In response to the ministry's Policy Summary on Integrated Solid Waste Management published in January, Human Rights Watch called on the ministry to define the phrase "priority dumpsites." In the roadmap, sent to Cabinet in June, the ministry failed to set out a clear schema and factors to be considered during the rehabilitation and closure of open dumps. HRW stated that the Lebanese government has a responsibility to give priority to those communities which are "particularly vulnerable to environmental harm," noting that these are normally lower-income communities.⁵⁶

But even rehabilitation of dumpsites is a costly business and one which relies on the cooperation of local authorities. One current candidate for rehabilitation is the Aadoueh dumpsite, near the border between the North and Akkar Governorates, the closure of which earlier this year led

⁵⁴ Azhari, Timour, Cabinet approves plan to expand Costa Brava landfill, The Daily Star, January 12, 2018,

<https://www.dailystar.com.lb/News/Lebanon-News/2018/Jan-12/433384-cabinet-approves-plan-to-expand-costa-brava-landfill.ashx>

⁵⁵ The Daily Star, Sukleen denies Gemayel claims on waste burial, corruption, August 19, 2016, <http://www.dailystar.com.lb/News/Lebanon-News/2016/Aug-19/367961-sukleen-rejects-gemayels-misleading-information.ashx>

⁵⁶ Human Rights Watch's Comments on the Integrated Solid Waste Management Strategy, HRW, March 20, 2019,

https://www.hrw.org/sites/default/files/supporting_resources/20190320_hrw_comments_iswms.pdf

to a garbage crisis in several northern municipalities. The Environment Ministry plans to request at least \$5 million to establish a sanitary landfill in place of the dump. However, the ministry may face problems trying to acquire the land, according to Mustafa Seif who runs the dump. Seif recently told The Daily Star that he would oppose the government buying the land, preferring the ministry moved the landfill elsewhere.⁵⁷

The likelihood of Lebanon continuing to rely on open dumps, therefore, is high. A GIZ source recently summed up this expectation, noting that Lebanon would “always need dumpsites.”

Health challenges: waste burning

Of Lebanon’s nearly 1,000 open dumps, 617 are municipal solid waste dumps, many of which are being burned on a regular basis. In a 2017 survey, Human Rights Watch discovered that many dumps are burned directly adjacent to people’s homes.⁵⁸

“[The dangers of burning household waste] include exposure to fine particles, dioxins, volatile organic compounds, polycyclic aromatic hydrocarbon, and polychlorinated biphenyls, which have been linked to heart disease, cancer, skin diseases, asthma, and respiratory illnesses.”⁵⁹

Human Rights Watch, “As If You’re Inhaling Your Death”

Burning industrial and medical waste has an even more lethal effect on human health. In 2017, HRW noted “the presence of animal carcasses, tires, and medical waste” at many of the dumps it visited which including Burj Hammoud, Fanar, Sin el Fil, Antelias, Dora, Jdaideh, and Dekwaneh, Zahle, Kfar Zabad, Bar Elias, and Baalbek, Doha, Naameh, Majadel, Chehabiyeh, and Sour. According to SWEEP-Net and GIZ’s 2013 report, Lebanon produces 3,338 tonnes of hazardous industrial waste and 25,040 tonnes of medical waste every year. Around 5,000 tonnes of the medical waste is infectious.⁶⁰ Efforts to

⁵⁷ Azhari, Timor, Tackling the North’s trash crisis, The Daily Star, July 15 2019, <http://www.dailystar.com.lb/GetArticleBody.aspx?id=487657&fromgoogle=1>

⁵⁸ Human Rights Watch, “As If You’re Inhaling Your Death”: The Health Risks of Burning Waste in Lebanon, December 1 2017, <https://www.hrw.org/report/2017/12/01/if-youre-inhaling-your-death/health-risks-burning-waste-lebanon>

⁵⁹ Ibid.

⁶⁰ GIZ; SWEEP-Net, Country Report on solid waste management in Lebanon, April 2014

document and manage this toxic waste are “insufficient and sketchy,” according to a UNDP report from 2010.⁶¹

A 2017 map from the Environment Ministry and the United Nations Development Programme shows the locations of the 617 municipal solid waste dumps [Figure III]. The majority of open dumps are located outside of Beirut and Mount Lebanon - a direct result of the government’s prioritisation of waste collection and disposal in the most populous governorate and producer of just over half of Lebanon’s MSW. This has left municipalities outside Beirut and Mount Lebanon to fend for themselves without adequate financial support, technical expertise, and oversight.⁶² This means that waste burning disproportionate effect the health of lower income households, HRW has observed.

Over 150 open dumps are burned on a weekly basis, most of which are situated in areas outside of the comparatively wealthy governorate of Beirut and Mount Lebanon.⁶³ Within this governorate, there are over 100 open dumpsites of which only nine are regularly burned. Despite the geographical imbalance, waste burning has increased considerably in Beirut and Mount Lebanon since 2015, a year which brought the collapse of the waste management system in the governorate (see Section I). Within a five day period in July 2015, the peak of the garbage crisis, Beirut Fire Department reported putting out 140 fires on dumpsters and uncollected rubbish in Beirut alone.⁶⁴ In the two years following the crisis, the department said it responded to 3,612 reports of open burning of waste in the governorate, and only 814 in the rest of the country, representing, in Beirut and Mount Lebanon alone, a 330 percent rise of open burning cases in 2015 and an additional 250 percent rise in 2016.⁶⁵

Health challenges: mismanagement of sanitary landfills

The 2015 waste crisis resulted, in part, from the mismanagement and over-reliance on Naameh landfill, effectively turning what was meant to be a sanitary landfill into an open dump. The details of this process are explained in the next section. Now, Beirut’s Burj Hammoud landfill, which receives

⁶¹ UNDP, State & Trends of the Lebanese Environment, June 15, 2011
http://www.lb.undp.org/content/lebanon/en/home/library/environment_energy/state---trends-of-the-lebanese-environment.html

⁶² Ibid.

⁶³ Human Rights Watch, “As If You’re Inhaling Your Death”: The Health Risks of Burning Waste in Lebanon, December 1 2017,
<https://www.hrw.org/report/2017/12/01/if-youre-inhaling-your-death/health-risks-burning-waste-lebanon>

⁶⁴ Issa, Philip; Zaatari, Mohammed, Officials wrangle over Beirut and Mount Lebanon’s waste, The Daily Star, July 24, 2019, <https://www.dailystar.com.lb/News/Lebanon-News/2015/Jul-24/308057-officials-wrangle-over-beirut-and-mount-lebanons-waste.ashx>

⁶⁵ Human Rights Watch, “As If You’re Inhaling Your Death”: The Health Risks of Burning Waste in Lebanon, December 1 2017,
<https://www.hrw.org/report/2017/12/01/if-youre-inhaling-your-death/health-risks-burning-waste-lebanon>

approximately 1000 tonnes of MSW per day - roughly a third of the daily tonnage in Beirut and Mount Lebanon⁶⁶ - risks a similar fate. To avoid scenes similar to those witnessed in 2015, the Environment Ministry has proposed expanding the site (see Section III). Residents in the vicinity have long complained of unpleasant smells; it came as no surprise when an international consultant recently found that the landfill is one of the main causes of the stench.⁶⁷ Astonishingly, the consultant suggested using odour reducing products, raising questions as to why the government would invest in tackling the smell, rather than the root of the problem.⁶⁸

In response to the 2015 garbage crisis, researchers at the American University of Beirut found correlations between landfilling and various health risks due to “inhaled gas and exposure to groundwater contaminated by landfill leachate.”⁶⁹ These health risks include: an increased risk of cancer - in particular pancreatic and skin cancer in males; “congenital abnormalities such as non-chromosomal birth defects, nervous system birth defects, hypospadias, epispadias, and low birth weight;” and increased risk of asthma. Gas and leachate emissions vary considerably between sites, depending on waste composition and the age of the landfill, they noted. It goes without saying that the human cost is in addition to a host of environmental consequences.

“[Landfilling] prevents oxygen diffusion into the soil thereby discourages revegetation; contributes to global warming through production of carbon dioxide; produces toxins which retards plant growth and agricultural yields; increases fish mortality through production of toxic oxides; affects health of herbivores through ingestion of plants bioaccumulating trace metals.”⁷⁰

K2P Evidence Summary: Approaching the Waste Crisis in Lebanon

⁶⁶ GIZ; SWEEP-Net, Country Report on solid waste management in Lebanon April 2014.

⁶⁷ The Daily Star, Expert says bad Beirut smells coming from trash, sewage, June 12, 2019 <http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-12/485054-expert-says-bad-beirut-smells-coming-from-trash-sewage.ashx>

⁶⁸ Baaklini, Suzanne, Beirut stinks: when will the root of the problem be tackled? L'Orient Le Jour, June 13, 2019, <https://www.lorientlejour.com/article/1174582/beirut-stinks-when-will-the-root-of-the-problem-be-tackled.html>

⁶⁹ Hilal, Nadeen; Fadlallah, Racha; Jamal, Diana, El-Jardali, Fadi, K2P Evidence Summary: Approaching the Waste Crisis in Lebanon: Consequences and Insights into Solutions, December 20, 2019, https://www.aub.edu.lb/k2p/Documents/K2P%20Evidence%20Summary%20Waste%20Management_Financial%20Dec%202014%202015.pdf

⁷⁰ Ibid.

Environmental regulations have been skirted since day one during the construction of the Burj Hammoud landfill. For example, an Environmental Impact Assessment was not carried out before work began on the Burj Hammoud landfill, according to a source at the Environment Ministry, given the “urgency” of building the landfill.⁷¹ HRW issued a warning in June 2019, stating that the proposed expansion would contravene Lebanese legislation and international standards, if an Environmental Impact Assessment were not carried out before expansion began.⁷² Lebanese Environmental Law 8633 of 2012 stipulates that an Environmental Impact Assessment (EIA) must be conducted and referred to the Environment Ministry before the beginning of the project. The assessment should identify the project’s impacts and take steps to mitigate and manage issues that may arise from the project. The ministry had not carried out an EIA at the time of writing.

⁷¹Azhari, Timour, Regulations bypassed in Burj Hammoud landfill project, The Daily Star, July 29, 2017, <https://www.dailystar.com.lb/News/Lebanon-News/2017/Jul-29/414364-regulations-bypassed-in-burj-hammoud-landfill-project.ashx>

⁷²Human Rights Watch, Lebanon: Beirut Landfill Near Capacity, June 25, 2019 <https://www.hrw.org/news/2019/06/25/lebanon-beirut-landfill-near-capacity>

III - 2019: New faces, old patterns

In April 2019, Environment Minister Fadi Jreissati pledged to treat 80 percent of waste and landfill the remaining 20 percent.⁷³ Considering Lebanon currently landfills or openly dumps around 75 percent of its waste,⁷⁴ Jreissati's pledge was ambitious. The ministry continued to publicly oppose the expansion and creation of landfills, until May 2019 when it announced that it had little choice but to expand and create landfills to avoid a rerun of the 2015 garbage crisis.

Landfills and incineration will play a large role in Lebanon's attempts at solid waste management in the coming years, according to a document recently submitted by the ministry to Prime Minister Saad Hariri. In the ten year "roadmap," the ministry called for the expansion of Burj Hammoud landfill and the creation or rehabilitation of other landfills including Naameh. It also specified the location of two incinerators, a controversial plan which will be discussed later in this section. The landfilling aspect of the roadmap suggests that politicians have not heeded the cost of failing to find sustainable solutions to waste management, such as reducing waste production, composting and recycling. The proposed expansion and creation of landfills appears to follow a line of thinking that historian and anthropologist Andrew Arsan says was bred by the Lebanese Civil War.

"...one focused entirely on the short-term, the exceptional and the temporary... but utterly uninterested in, or incapable of devising dispensations for the long run."

Andrew Arsan, A Country in Fragments⁷⁵

Environment Minister Fadi Jreissati also insisted in April that he would oppose expansion until a national strategy for integrated solid waste management was endorsed.⁷⁶ The government has been attempting to create a national strategy for solid waste management for many years. On October 10 2018 Cabinet passed Law 80 on Integrated Solid Waste Management which stipulated, among other

⁷³ 20% الوكالة الوطنية للإعلام, وزير البيئة إفتتح مؤتمر ادارة النفايات: نطمح لمعالجة 80 % من النفايات وطمر, April 9, 2019 <http://nna-leb.gov.lb/ar/show-news/402597/nna-leb.gov.lb/ar>

⁷⁴ Human Rights Watch, Lebanon: Beirut Landfill Near Capacity, June 25, 2019 <https://www.hrw.org/news/2019/06/25/lebanon-beirut-landfill-near-capacity>

⁷⁵ Arsan, Andrew, Lebanon: A Country in Fragments, p372

⁷⁶ 20% الوكالة الوطنية للإعلام, وزير البيئة إفتتح مؤتمر ادارة النفايات: نطمح لمعالجة 80 % من النفايات وطمر, April 9, 2019 <http://nna-leb.gov.lb/ar/show-news/402597/nna-leb.gov.lb/ar>

goals, the creation of a national SWM strategy “within a period of not more than six months.”⁷⁷ However, no national strategy existed at the time of writing, almost nine months later, despite the creation of a new committee (ISWMC⁷⁸) under Jreissati’s ministry, tasked with succeeding where successive post-war governments had failed in forming the strategy. The committee includes representatives from seven ministries, consulting company Rafik El Khoury, contracting company Solidere, the Council of Development and Reconstruction (CDR), academics and NGOs. The latter category is represented solely by Paul Abi Rached, an environmental activist and founder of environmental NGO T.E.R.R.E Liban.

The ISWMC is far from achieving what it was created to do, according to Rached, who believes that Jreissati’s roadmap does not resemble a national strategy. Rached also claims that the minister sent the document to Hariri behind the committee’s back because its members would not have supported the expansion and creation of landfills and incinerators. The committee held its third ever meeting on May 31, but Jreissati did not produce the roadmap, Rached said. On June 5, he heard that Jreissati had sent the roadmap to Hariri two days previously. Rached claims that the road map - a mere two pages long, with 11 pages of annexes - was not discussed with the ISWMC before it was sent to Hariri, who heads a ministerial committee which will finalize the road map before it is sent to Cabinet.

Law 80 calls for the decentralisation of SWM among “local administrations,” - in other words Lebanon’s 1108 municipalities, in addition to “unions of municipalities, municipality groups, administrative decentralization organizations and entities charged with carrying out municipal functions.” The Policy Summary on Integrated Solid Waste Management, published in January 2018, called on the Environment Ministry to send a survey form to these authorities, after which they will have one month to respond with their financial and administrative capabilities. “Non-respondent” municipalities will be fined, while “Municipalities showing readiness to administer these stages will be given two months to submit their proposals to the committee.” Municipalities will then be classed either as “capable” or “not capable” of carrying out all stages of SWM on their own. For this reason, Executive Magazine’s Scott Preston has argued that the law may have the effect of centralising waste management; municipalities judged “not capable” will be included in “state-tendered programs.”

⁷⁷ Law Number 80 Integrated Solid Waste Management, p7
https://www.hrw.org/sites/default/files/supporting_resources/iswm_law_80_october2018_english.pdf

⁷⁸ لجنة التنسيق شؤون قطاع النفايات الصلبة - Integrated Solid Waste Management Committee, formed as per MOE Decision 108/1 dated March 5 2019.

In an official response, the ministry denied that the roadmap had not been seen by the ISWMC.

“The various elements of the fore-mentioned roadmap were raised during the three meetings of the ISWM committee held so far in April and May 2019. Upon submittal of the document to the ministerial committee, a copy was shared with the ministerial committee. There is still room for further comments and suggestions before, or parallel to, discussion by the Ministerial committee,”

Environment Ministry, official response.⁷⁹

The national strategy, on which the committee continues to work, “constitutes a core element of the proposed roadmap,” added the ministry. Indeed, Marc Beirouty, one of Jreissati’s advisers, described the document as a “strategy.” But Mohammad Baraki, a representative of the minister of state for administrative development on the committee, told The Daily Star that Jreissati had submitted the plan to Cabinet “under pressure.” Two other members said they had not read the document.

In short, the roadmap appears to be the latest example of a stop-gap response designed to stave off short-term crises rather than create long-term solutions. The apparent circumvention of the ISWMC also raises questions about transparency in the government’s approach to solid waste management in Lebanon. This chapter will examine the document, focussing on the two most controversial proposed measures: landfilling and incineration.

The Environment Ministry’s ten year “roadmap”

1) Landfilling

“[The Burj Hammoud landfill is] a time bomb given to me three months ago.”

Fadi Jreissati, interview with The Daily Star⁸⁰

Beirut’s Burj Hammoud landfill will reach full capacity by the end of July 2019, Human Rights Watch warned in June. This came as no shock; in May, the site’s manager Toufic Kazmouz stated the landfill would be full by August at the latest. The same month, officials announced that they were

⁷⁹ Response from Environment Minister Fadi Jreissati’s office regarding the roadmap, June 11 2019

⁸⁰ Azhari, Timor, Jreissati: I have asked EU to monitor waste incineration, The Daily Star, June 25, 2019 <http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-25/486023-eu-to-monitor-waste-incineration-jreissati.ashx>

considering vertical expansion of the site as a final resort to prevent it overflowing.⁸¹ Horizontal expansion of the landfill would have been an option, if it could have been finished on time - Kazmouz estimated that such work would require until September at the earliest. Many environmentalists have raised concerns about the landfill's environmental impact and oppose its expansion, for reasons outlined in Section I. Now, the Environment Ministry's roadmap has sought Cabinet's support to do exactly that.

The "roadmap," seen by the writer, establishes two timeframes: 2019 - 2020 and 2021 - 2030. During the first period, the ministry has requested permission from the Cabinet to expand the Burj Hammoud and Costa Brava landfills, and to establish sanitary landfills in new locations, providing at least 15 proposed sites. One suggested site is the old Naameh landfill, the "temporary" site whose mismanagement and extended lifespan angered locals for almost two decades. The ministry says that the purpose of these steps is to "putting an end, the soonest, to open dumping,"⁸² an issue explored in the second section. During the same period - 2019 to 2020 - the roadmap calls on the Environment Ministry to produce the long-awaited national strategy for solid waste management. In other words, the finalized plan may be a year and a half overdue. In the meantime, elements of the roadmap including the expansion of Burj Hammoud are likely to be implemented, meaning that Jreissati's promise to prioritise creating a national strategy was an empty one.

"The proposed expansion of the Burj Hammoud landfill is broadly considered a stopgap measure until the broader solid waste strategy is implemented."

Human Rights Watch, Lebanon: Beirut Landfill Near Capacity.⁸³

In June, HRW issued a warning in response to the roadmap, focussing on the Environment Ministry's alleged failure to undertake an Environmental Impact Assessment on Burj Hammoud landfill's expansion. HRW claimed that the decision to overlook such an assessment contravenes the ministry's own decree (8633), which was passed in 2012 and lays out the "Fundamentals for Environmental Impact Assessment," a necessary environmental assessment for any planned work.⁸⁴ A spokesperson for the

⁸¹ <https://www.dailystar.com.lb/News/Lebanon-News/2019/May-17/483379-trash-to-pile-higher-at-burj-hammoud-landfill.ashx>

⁸² Ibid.

⁸³ Human Rights Watch, Lebanon: Beirut Landfill Near Capacity, June 25, 2019 <https://www.hrw.org/news/2019/06/25/lebanon-beirut-landfill-near-capacity>

⁸⁴ Decree No. 8633 "Fundamentals for Environmental Impact Assessment," <http://www.moe.gov.lb/getattachment/85caf6ed-920d-41fb-8fc4->

ministry told The Daily Star that HRW's accusation was untrue.⁸⁵ HRW also advised that the roadmap should be discussed in a ministerial committee for consideration with experts and for a public consultation before being finalized and submitted to Cabinet.⁸⁶

Rached believes that the ministry's roadmap inadequately explores waste treatment suggestions discussed in the ISWMC's meetings, such as Refuse Derived Fuel (RDF), composting and recycling. He added that Lebanon could reduce its landfilling to 40 percent in the near future, if such measures were implemented. Rached has circulated a counter proposal in response to the roadmap which is examined at the end of the chapter. From 2019 to 2030, the ministry will also undertake to close Lebanon's hundreds of unofficial dumpsites and "gradually rehabilitate them according to priorities." However, as mentioned in Section II, it is unclear which factors will influence these "priorities."

2) Incinerators

Proponents of incineration argue that the technology would be more cost- and space-effective than landfilling. Beirut Mayor Jamal Itani has spearheaded the campaign to build an incinerator in or near Beirut, arguing that such a facility would be a modern waste-to-energy plant, not an outdated trash incinerator.⁸⁷ Unlike trash incinerators, modern waste-to-energy plants remove hazardous or recyclable waste before incineration.

[a864d6537631/%D9%85%D8%B1%D8%B3%D9%88%D9%85-%D8%B1%D9%82%D9%85-8633-%D8%A7%D8%B5%D9%88%D9%84-%D8%AA%D9%82%D9%8A%D9%8A%D9%85-%D8%A7%D9%84%D8%A7%D8%AB%D8%B1-%D8%A7%D9%84%D8%A8%D9%8A%D9%8A%D9%8A.aspx/](http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-25/486104-hrw-warns-burj-hammoud-landfill-near-capacity-advocates-sorting-at-source.ashx)

⁸⁵ Anderson, Finbar, HRW warns Burj Hammoud landfill near capacity, advocates sorting at source, The Daily Star, June 25, 2019, <http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-25/486104-hrw-warns-burj-hammoud-landfill-near-capacity-advocates-sorting-at-source.ashx>

⁸⁶ Human Rights Watch, Lebanon: Beirut Landfill Near Capacity, June 25, 2019 <https://www.hrw.org/news/2019/06/25/lebanon-beirut-landfill-near-capacity>

⁸⁷ Marsi, Federica, Beirut mayor touts waste-to-energy plan, The Daily Star, April 2, 2017, http://www.dailystar.com.lb/News/Lebanon-News/2017/Apr-12/401618-beirut-mayor-touts-waste-to-energy-plan.ashx?utm_source=Magnet%26utm_medium=Entity%20page%26utm_campaign=Magnet%20tools

“The sorted and unsorted material will be separated again within the plant. After [this] we will pretreat the remaining material to reduce the volume of garbage before going from waste to energy.”

Jamal Itani, speaking to The Daily Star⁸⁸

But environmentalists fear that incinerator operators would not be so scrupulous about sorting waste before incinerating it. The Beirut Municipality recently postponed discussing terms for the Beirut waste incinerator after protesters and three MPs - Kataeb MPs Nadim Gemayel and Elias Hankash and independent MP Paula Yacoubian - gathered outside the municipality building in objection. Yacoubian, one of the most vocal critics of the Beirut incinerator, calls for sorting at the source and sanitary landfilling as the solution to Lebanon’s waste issues.⁸⁹

Academics also fear that air pollution controls would not be implemented properly, despite Itani’s pledge that the toxic fly ash emitted by incinerators would be monitored by internationally recognized independent committees, and made available for public scrutiny.

“Operation costs are very high, especially for maintaining pollution control units... We do not trust that the operations will be conducted according to European standards because there is no law, there is no infrastructure, and there is plenty of corruption,”

Joseph Zeaiter, chemical engineering professor at the American University of Beirut, speaking to The Daily Star.⁹⁰

Jreissati recently sought to dispel fears that toxic substances would be mismanaged, claiming that he was in discussions with top European Union officials to organise EU experts to oversee the facilities.

⁸⁸ Ibid.

⁸⁹ Hour, Sahar, Protest lit against incinerators, municipality halts decision, The Daily Star, July 5, 2019 <http://www1.dailystar.com.lb/News/Lebanon-News/2019/Jul-05/486827-protest-lit-against-incinerators-municipality-halts-decision.ashx>

⁹⁰ Ibid.

“If I want to go for this solution, I want to give the right guarantees to the Lebanese people. ... I want to make sure there is a credible control body, and I don’t think we [the Lebanese government] are qualified today to do this control,”

Fadi Jreissati, speaking to The Daily Star.⁹¹

Jreissati’s comments directly contradict the previous Environment Minister Tarek Khatib who claimed last year that the Environment Ministry “can oversee 20 incinerators with the employees it currently has.”⁹² However, EU officials were quick to point out that the EU had not confirmed that it will oversee waste incinerators in Lebanon. The plan to build an incinerator in or around Beirut remains the most controversial of incineration plans, due to Beirut’s already highly polluted air.⁹³ According to Najat Saliba, Professor of Analytical Chemistry at the American University of Beirut, carcinogen levels in Beirut are seven times higher than in Los Angeles. In a recent interview, Saliba described the Beirut incinerator as “the last thing we need.”

Curiously, the roadmap does not mention the Beirut incinerator. This is not because the Environment Ministry opposes an incinerator in Beirut, an Environment Ministry source said, but rather because Beirut municipality is the driving force behind the project.

“Law 80 calls on the decentralisation of waste management. Beirut municipality made it clear that they want their own plant. We can’t impose our own solution,”

Environment Ministry source, July 12, 2019.

The roadmap does set two locations for incinerators outside of Beirut: one in Deir Ammar, north of Tripoli, and another in either Jiyeh or Zahrani, between Beirut and Sidon. The ministry selected these locations because all three are close to existing power plants, the source added. Environmental impact assessments for incinerators should be completed by 2020, the plan states. By 2021, tenders must be carried out and contracts awarded. The construction of incinerators should be finished by 2024.

⁹¹ Azhari, Timor, Jreissati: I have asked EU to monitor waste incineration, The Daily Star, June 25, 2019 <http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-25/486023-eu-to-monitor-waste-incineration-jreissati.ashx>

⁹² Ibid.

⁹³ Boswall, Jacob, Beirut twice over EU limit for air quality, The Daily Star, June 4, 2019, <https://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-04/484614-beirut-twice-over-eu-limit-for-air-quality.ashx>

Proposed alternatives to the roadmap

One of the direct responses to the 2015 garbage crisis was the Waste Management Coalition (WMC), formed in 2016. The group aims to bring together civil society organisations, independent experts, and environmental activists to find sustainable solutions to solid waste management in Lebanon.⁹⁴ WMC's methods include public awareness campaigns, advocacy, lobbying, and legislative proposals. The group has been notably critical of incineration, leading awareness campaigns on the negative health impacts of incinerators and starting a petition against incineration which had garnered over 15,000 signatures at the time of writing.

WMC has an active social media through which it disseminates information about harmful practices in SWM, especially the environmental and health impacts of incineration and dumping waste on the seashore. It has also criticised Law 80 on Integrated Solid Waste Management, requesting its reformulation based on sustainability principles.

The WMC aims to bring about an integrated plan with strict adherence to sustainability principles, reflected in clear goals, and well-developed implementation mechanisms. The WMC will pursue its lobbying actions using scientific research and stakeholders' engagement, in addition to raising awareness and advocacy to warn of the risks of unsuitable proposals and policies and advocate for alternative solutions.

Zeina Abla, member of WMC⁹⁵

WMC has also made more public gestures against proposed incinerators. In early January, WMC installed the "Toxic Flag" - a 12 meter long art installation representing a flag made of black smoke – next to the possible site of a planned incinerator in Beirut's Karantina, to raise awareness of the dangers of incineration.⁹⁶

⁹⁴ Waste Management Coalition, Homepage, <https://wmclebanon.org/en/home-ar/en/home/>

⁹⁵ Abla, Zeina, *A Wasted Waste Law*, Lebanese Center for Policy Studies, <http://www.lcps-lebanon.org/featuredArticle.php?id=191&eType=EmailBlastContent&eId=ab9e6cdd-8560-4dd0-a51e-9a4aea5d5836>

⁹⁶ Najib, 7ara2to Samana: Black Smoke in the skies of Karantina, <https://blogbaladi.com/7ara2to-samana-black-smoke-in-the-skies-of-karantina/>

Rached's NGO T.E.R.R.E Liban has circulated his own emergency plan in response [Figure IV] to Jreissati's roadmap, in which he questions the necessity of expanding the Burj Hammoud landfill. In the plan he identifies the following priorities:⁹⁷

- 1) Launch an awareness raising campaign in Beirut and Mount Lebanon with the aim of reducing and sorting waste at the source. The campaign would be led by civil society movements and would teach residents of the governorate to sort recyclables, organic waste, toxic waste and reject waste in their homes.
- 2) Install public bins for sorted waste in the streets of Beirut. Collected and sorted waste would be sent to a waste treatment center in Beirut.
- 3) Improve waste collection and transportation by contractors.
- 4) Ensure proper monitoring of the Amrousieh and Karantina sorting plants and the Coral and Costa Brava composting plants.
- 5) Apply Law 80, especially the principle of making the polluter pay for its pollution.

The fifth priority references a clause in Law 80's Article 8 called the "polluter pays principle."⁹⁸

"Polluters bear the costs of managing the solid waste they generate and the costs of the mitigation measures to be taken to resolve the problems ensuing from the waste or that may result from it, provided that these costs are commensurate with the quantity and quality of the waste."

Law 80, Article 8

The law gives no indication of how such a tax would be implemented, how much the polluter should pay, or which establishments should be included in the law.

T.E.R.R.E Liban's plan also calls for the implementation of waste hierarchy, prioritising in order: waste prevention, reuse, recycling and composting, energy recovery, and disposal. The plan, whose key arguments are similar to those of other civil society groups and MPs such as Paula Yacoubian, has not been met with an official response from the Environment Ministry.

⁹⁷ خطة طواري لإدارة نفايات بيروت وجبل لبنان 2019, T.E.R.R.E Liban

⁹⁸ Law Number 80 Integrated Solid Waste Management, p6
https://www.hrw.org/sites/default/files/supporting_resources/iswm_law_80_october2018_english.pdf

Appendix

Figure I: Map showing Hydrogen Sulfide levels around the Burj Hammoud landfill [Source: AUB Nature Conservation Center Facebook, February 28 2019]

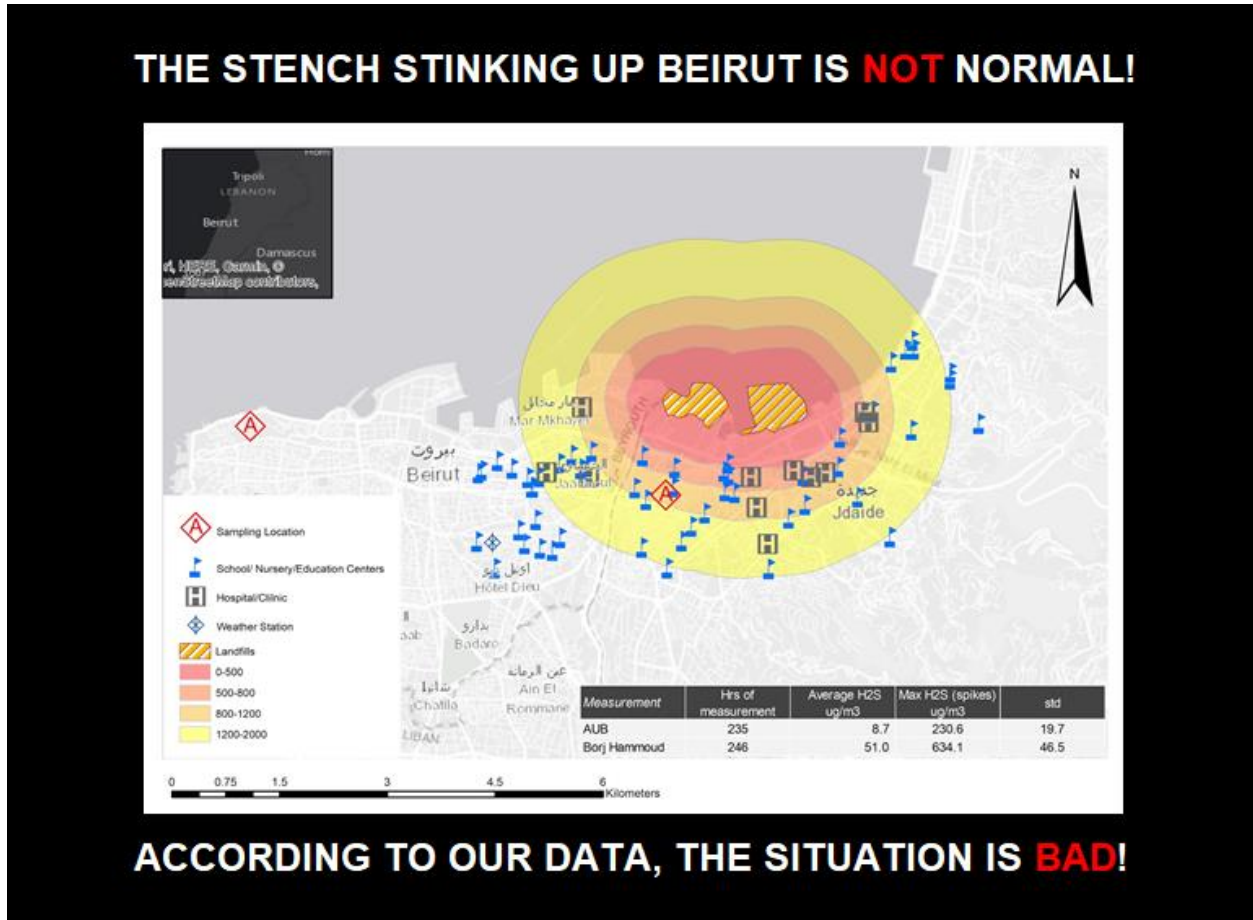


Figure II: Map showing waste treatment facilities [Source: United Nations Development Program and the Environment Ministry, May 29 2019.]

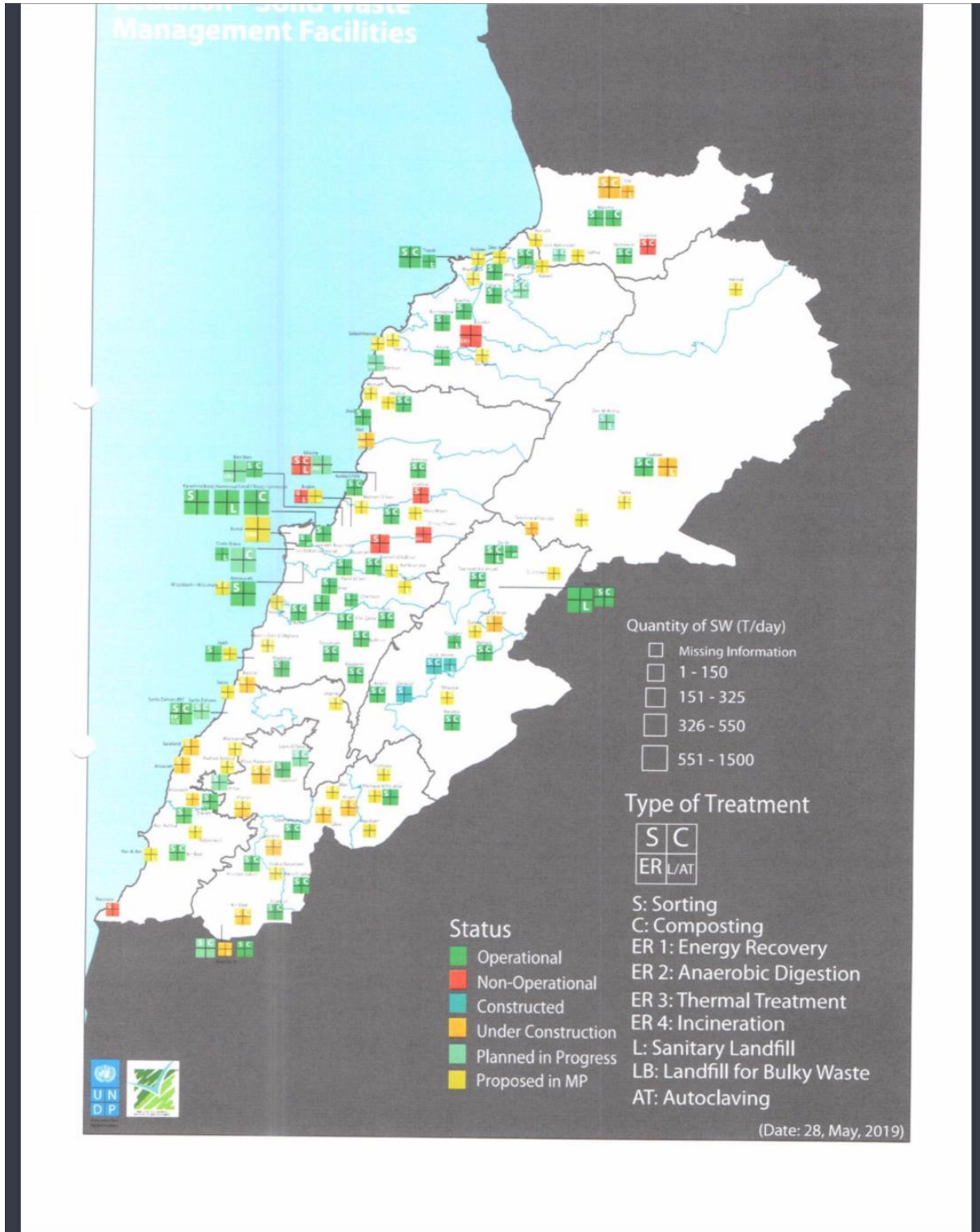


Figure III: Map showing Lebanon's 617 MSW dumpsites with burning rates [Source: Environment Ministry/UNDP, December 1, 2017]

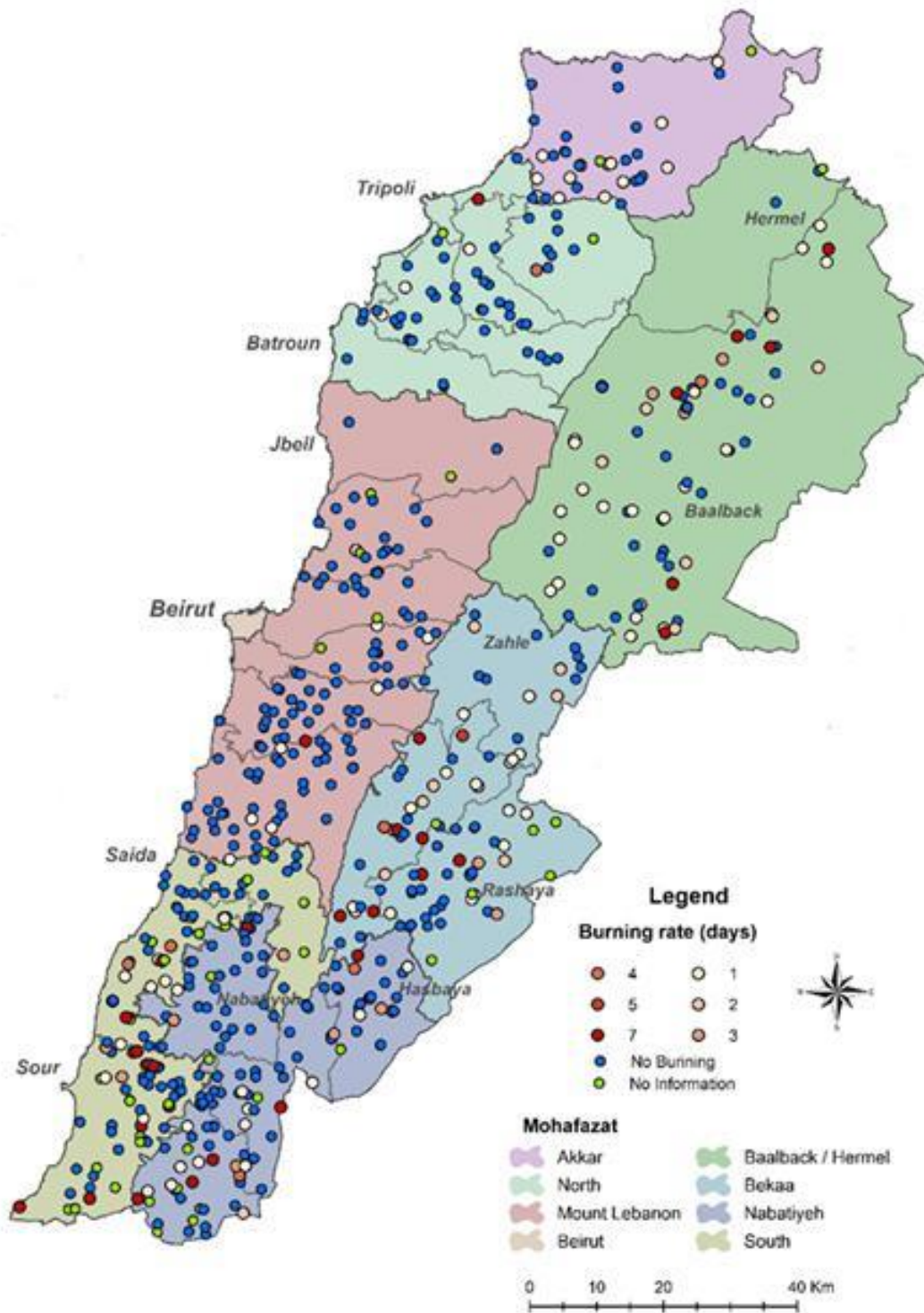


Figure IV: T.E.R.R.E Liban's emergency plan in response to the Environment Ministry's roadmap [Source: Paul Abi Rached, June 11 2019]

لذلك

تقترح جمعية الارض - لبنان مسودة خطة طوارئ لإدارة حوالي ٣٠٠٠ طن في اليوم لنفايات بيروت وجبل لبنان (باستثناء قضاء جبيل) خلال موسمي الصيف والخريف من العام ٢٠١٩ وترتكز هذه الخطة على النقاط التالية:

١. إطلاق حملة توعية للمواطنين في بيروت وجبل لبنان على التخفيف والفرز من المصدر (النفايات القابلة للتدوير + النفايات العضوية + المرفوضات + النفايات الخطرة + النفايات الموسمية) بمشاركة هيئات المجتمع المدني.
٢. رفع المستوعبات من الشوارع من قبل البلديات وإستحداث مركز أو أكثر (Déchetterie) لجمع وترحيل النفايات المفروزة.
٣. تحسين عملية الجمع والنقل من قبل المتعهدين.
٤. مراقبة فعالية مراكز الفرز الثانوي في الكرنطينا والعمرسية، ومصانع التسيخ في الكورال والكوستا براكا.
٥. تطبيق جدي لقانون الإدارة المتكاملة للنفايات الصلبة رقم ٨٠ ولاسيما مبدأ الملوث يدفع.

مركز جمع وترحيل النفايات المفروزة

Déchetterie



خلاصة

بناء على ما تقدم ستسمح هذه الخطة المقترحة:

١. بتخفيض نسبة الطمر إلى النصف (١٤٠٠ طن يوميا) على أن تنخفض عند بدء العمل بمعمل التسيخ في الكوستا براكا.
٢. بإعطاء الوقت اللازم لوزارة البيئة من أجل تأمين مطمر صحي للعوادم وإيقاف مطمري برج حمود بعد ٨ أشهر والكوستا براكا بعد سنة ونصف.
٣. بإنقاذ مرفأ الصيادين في الدورة.
٤. بالحد من تلوث البحر المتوسط بالنفايات والعصارة والردميات .
٥. بالإستغناء عن فكرة المحارق المكلفة والمرفوضة من الناس في بيروت وجبل لبنان.