

**DEVELOPING A FRAMEWORK FOR SUSTAINABLE SOLID  
WASTE MANAGEMENT IN LIBYA**

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**DEVELOPING A FRAMEWORK FOR SUSTAINABLE  
SOLID WASTE MANAGEMENT IN AL-BAYDA CITY  
LIBYA**

By

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## MEMBANGUNKAN RANGKA KERJA UNTUK PENGURUSAN BAHAN SISA PEPEJAL YANG MAPAN DI LIBYA

### ABSTRAK

Pengurusan sisa pepejal (solid waste management, SWM) merupakan isu alam sekitar di kebanyakan negara membangun, termasuk negara Libya. Secara amnya, dipersetujui bahawa sokongan atau penglibatan orang awam adalah penting dalam kejayaan kebanyakan program dan skema pengurusan sisa pepejal; tindakan isi rumah adalah tunggak kejayaan dasar sisa pepejal yang mapan. Akan tetapi, kejayaan program atau skema pengurusan sisa pepejal tidak hanya bergantung kepada penglibatan orang awam; malah ia juga bergantung kepada infrastruktur yang baik dan penyediaan perkhidmatan di lokasi berkenaan, serta memenuhi keperluan setempat. Penyelidikan ini dijalankan di bandar Al-Bayda, yang terletak di bahagian timur Libya. Bandar ini dipilih sebagai lokasi kajian kerana terdapat pelbagai halangan utama yang dihadapinya dalam menangani pengurusan sisa pepejal; terdapat sampah di merata-rata tempat serta di tepi-tepi jalan di bandar ini. Adalah sesuatu yang biasa melihat orang ramai membuang sampah-sarap sesuka hati di tempat-tempat awam. Antara halangan-tersebut termasuklah; tidak banyak dokumen yang terdapat berkaitan penjanaan, pengumpulan, pengendalian, pengangkutan, pengitaran semula serta pelupusan sisa pepejal. Satu kajian soal selidik secara pos telah diedarkan kepada 750 individu di bandar Al-Bayda, di antara bulan Jun dan Ogos 2011. Daripada 750 soal selidik yang diedarkan, hanya 468 soal selidik dikembalikan, yang memberikan kadar respons sebanyak 78 peratus. Data dianalisis secara statistik menggunakan program perisian Pakej Statistik untuk Sains Sosial (SPSS) versi 19.0. Dapatan analisis mengutarakan bahawa pihak berkuasa yang bertanggungjawab dalam pengurusan sisa pepejal di bandar Al-Bayda kurang berpengalaman serta tidak begitu cekap dalam menangani pengumpulan, pengangkutan serta pelupusan sisa pepejal. Mereka masih

mengamalkan kaedah lama atau tradisional (bagi pengumpulan, penangkutan serta pelupusan) serta melupuskannya di tempat atau tapak pelupusan yang tidak mempunyai standard kesihatan, yang beroperasi tanpa mengambil kira pertambahan penduduk bandar serta proses perbandaran di sekitar kawasan bandar ini. Di samping itu, pihak berwajib juga lemah dari segi keteraturan proses pengumpulan sisa pepejal. Ditemui juga faktor-faktor yang mempengaruhi proses pembuatan keputusan dalam pelupusan sisa pepejal rumah, antaranya sumber yang kurang dan perkhidmatan yang secara signifikan mempengaruhi pelupusan pepejal, dan bekas pelupusan yang tidak mencukupi—serta jarak tempat pelupusan yang agak jauh, mendorong orang ramai untuk membuang sampah di merata-rata tempat. Kajian membuktikan bahawa kaedah lama yang diamalkan dalam pengumpulan dan pelupusan sisa pepejal adalah tidak berkesan kerana ruang yang terhad untuk memuatkan kotak dan bekas sampah. Seharusnya perlu ada suatu dasar yang sesuai untuk mencapai program SWM yang mapan di bandar Al-Bayad. Penyelidikan semasa menunjukkan bahawa pihak berkuasa yang berkenaan di bandar A-Bayad tidak cekap serta tidak berpengalaman dalam mengurus pengumpulan, pengangkutan dan pelupusan sisa pepejal. Kajian ini mencadangkan bahawa pihak berkuasa Al-Bayda sepatutnya meningkatkan penglibatan sektor swasta untuk memastikan pengurusan sisa pepejal yang cekap di kawasan metropolitan. Penambahbaikan dalam MSWM boleh dicapai melalui perkongsian di antara pihak awam-swasta, yang melibatkan kedua-dua pihak yang formal mahupun tidak formal. Kerajaan secara amnya mempunyai sedikit pengalaman ataupun keyakinan berkaitan langkah-langkah yang boleh diambil dalam mewujudkan hubungan kerjasama yang memuaskan dengan pihak sektor swasta.

## DEVELOPING A FRAMEWORK FOR SUSTAINABLE SOLID WASTE MANAGEMENT IN LIBYA

### ABSTRACT

Solid waste management has become an environmental concern for many developing countries including Libya country. It is widely agreed that public support is vital to the success of most solid waste management programs and schemes; the actions of householders are paramount to the success of sustainable solid waste policies. However, the success of solid waste management programs or schemes is not just dependent on public participation; it is also dependent on having the right infrastructure and service provision in place, as well as tailoring to local needs. This research was conducted in the city of Al-Bayda, located in the eastern part of Libya. The reason why this study was conducted in this city because there have been several significant obstacles facing the city of Al-Bayda in dealing with solid waste management, it can be seen of rubbish or garbage be thrown in the city and along the street sides, It is also common to see people throwing or dumping their SW and rubbish in public place. In addition there is serious concern from the government about this issue. These obstacles are included; limited documentation regarding generation, collection, handling, transport, recycling and disposal of solid waste. A postal questionnaires survey was administered to 750 individuals in the city of Al-Bayda, which is located in the west part of Libya, between June and August 2011. Of these only 468 questionnaires were returned back yield a response rate 78 percent. Data were analyzed statistically using Statistical Package of Social Sciences (SPSS) software program (v.19.0). As findings, it was revealed that the authority of solid waste in the city of Al-Bayda city lacks experience and effective practice in the collection, transportation and disposal of waste, that it is still uses traditional methods of collection and transport of

conventional waste disposal randomly in old dumps where health standards are not available, and it operates its work without prior study to the city's population increase and urbanization in the outskirts of the city, and its lack of control over waste collection process in all city neighborhoods regularly. It also was found that Factors that affect the decision-making process of the home solid waste disposal are lack of the resources and services that significantly affect the disposal of waste, and inadequate containers' number and the length of the distance to these containers leads to an increasing likelihood of throwing waste in open areas and roadsides. The research found that the authority in charge of solid waste in Al-Bayda city lacks experience and effective practice in the collection, transportation and disposal of waste. This study proved that the traditional procedure followed in solid waste collection and disposal, is useless and there is shortage in the appropriate spaces to put garbage boxes and containers. There are policies found to be suitable in achieving sustainable SWM program in Al-Bayda city. The current research has revealed that the authority in charge of solid waste management in Al-Bayda city, is incapable in handling its target, that it lacks experience and effective practice in the collection, transportation and disposal of waste. The study recommends that the city government of Al-Bayda should increase the involvement of the private sector to ensure efficient management of solid wastes in the metropolitan area. While important improvements in MSWM may be achieved by the formation of public-private partnerships involving both formal and informal actors, governments generally have little experience or confidence regarding the steps which may be taken towards establishing satisfactory working relationships with private sector actors.