



Best Approaches for Solid Waste Management in the Arab Countries



A Reduce

B Re-use

C Recycling

D Energy

E Incineration

F Landfill

RECYCLE



During the Workshop



Lebanon



Egypt



Iraq



Jordan



syria



Egypt



Iraq



Jordan



syria





Recommendations

The regional workshop that was held in Lebanon related to:

“Best Approaches for the management of solid waste in the Arab Countries” on Friday 12/01/2017 and in which participated the JICA alumni associations of graduates from Syria, Jordan, Egypt, Iraq, and Lebanon, and came up with the following recommendations.

- 1- Adopt sustainable development and preservation of natural resources as a main target for solid waste treatment;
- 2- Adopt sorting at source and recycling as major principle in solid waste treatment;
- 3- Focus on awareness as a major condition for the success and sustainability of solid waste treatment;
- 4- Create a planning and an execution agency to follow up on solid waste management and treatment headed by the Ministry of Environment in coordination with the ministries of Interior and municipalities, and all other concerned ministries.
- 5- Encourage the decentralization in coordination with the central authorities for the treatment of solid waste.
- 6- Create a WhatsApp network between the participants to exchange data and information.

Other suggestions resulted from this workshop:

- 1- Present these recommendations to the concerned ministries mainly the Ministry of Environment hoping that the MOE.
- 2- Publish these recommendations in the media.

Orientation on JICA's Follow-up Cooperation Scheme

Background

Japan International Cooperation Agency has received more than 200 Lebanese trainees under JICA's Knowledge Co-creation Program (KCCP) and ex-trainees are assets of the Government of Lebanon and JICA for further collaboration and cooperation. However, except committed activities and initiatives of Leba-JICA in Lebanon and the region, we could not have utilized such assets to strengthen our partnership.



Objectives of the orientation

- To explain aims of JICA's Follow-up Cooperation Project
- To explain how to apply JICA's Follow-up Cooperation Project
- To illustrate good practices of JICA's Follow-up Cooperation Project

Therefore this orientation aims to introduce JICA's Follow-up Cooperation Scheme which helps ex-trainees to implement activities based on their mandate within public offices.

Date: Jan, 17, 2018

Number of Participants: 20

Details:

Leba-Jica invited all its members to an annual meeting on how to prepare a project proposal: A case study done by a member of Leba-Jica.

Introduction:

In 2017 a capacity building meeting took place and was attended by Leba-Jica members. The main topic of the meeting was on how to prepare a project proposal for the JICA in order to get funding.

This year Leba-Jica in coordination with JICA offices in Syria and Jordan launched an annual meeting to evaluate the previous one and to add more tangible information to it through a case study that was implemented at the ministry of Tourism.



Leba-Jica members in the ministries and public institutions are recommended to initiate an approach for implementing pilot projects each in his/her ministry or institution. Such move requests the knowhow as well as the funding. The objective of this meeting is to do a SWOT analysis based on a case study done by a member of Leba-Jica at the ministry of tourism.

Targeted Groups:

Members of Leba-Jica in each and every Ministry and public institution

The approach for reaching the goal:

An introduction on "Orientation on Follow-up Cooperation Scheme", was presented by Mr. Itsuro Takahashi Assistant Representative (Project Formulation) JICA, and was followed by a presentation by Ms. Petra Obeid a Leba-Jica member from the Ministry of Tourism, on how to prepare a project proposal for a pilot project at the Ministry of Tourism. Ms. Obeid was glad to share her experience with her fellow Leba-Jica members. The two presentations were followed by a discussion, and by exploring lessons learned from the participants.

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Follow up cooperation project: Rural Youth tourism school manual and documentary

The Lebanese Ministry of Tourism launched in 2015 its 5 year Rural Tourism Strategy, involving 8 strategic directions and aiming at improving the rural tourism sector attractiveness and capacity.

The Youth and Local Bodies department at the ministry was mainly concerned with the strategic direction number 7: Develop the culture of rural tourism among the young generation and in the education system.

In fact, experience in previous projects has revealed the great lack of tourism culture in schools and the non-availability of customized tourism information tools.

The idea of a school manual emerged. A practical handbook targeting school educators to inform them about tourism development initiatives in rural villages and to put them in contact with the municipalities for the organization of possible school trips.

A team work at the ministry was undertaken by the Youth and Local Bodies department, the Production department, the graphic designer, the editor and the IT department to develop the school manual concept, collect the relevant data from the local municipalities, create the design, edit and correct the literature content and convert the manual into an electronic version.

A mascot named "KOOZ" was chosen to be the visual identity of the school manual. This mascot was the winner of an interschool national competition organized in 2016 and where secondary class students were invited to design a mascot that represents rural youth tourism.

In the era of sound and image, an audio visual support was needed to complement this school manual. A 1012-minute documentary video that would inspire teachers to organize rural schools trips and would educate students about rural tourism and about all the activities and attractions this sector has to offer.

Further a tourism marketing training at JICA center in Tokyo, a follow up cooperation project was initiated in collaboration with JICA Beirut and Amman offices to produce the documentary film, develop the DVDs that would contain both the school manual and documentary and distribute them via postal services to all schools across the Lebanese territory (around 2500 schools).

Partnership was established with Notre Dame University Film Festival Department to choose the shooting team, supervise the work and provide technical material.

The shooting of the documentary took place in more than 10 locations across 5 geographical areas and spanned 6 days. Scenes were featuring kids and teenagers discovering the cultural and natural heritage of rural Lebanon, while hiking in nature reserves or typical villages, taking part in handicrafts workshops, preparing local traditional food, visiting farms or participating in nature-based and extreme sports activities.

Again, the mascot KOOZ was used as the visual identity of the documentary and an animated version of the character was playing the role of the rural tourism guide throughout the movie.

The DVDs were distributed during February 2018 to 2452 private and public schools across the country, and started to receive very positive feedback.





Art activity Japan From Lebanese Eyes - IV

Subject: Art Activity “Japan From Lebanese Eyes”

Place: N. Dame of Mont Carmel College, Fanar – Sed el Bauchrieh

Time: 11th of April at 10:30 a.m.

Duration: The activity lasted around 2 hours.

The drawing contest was to draw a painting using black and white or colored paintings on an A4 sheet. The drawings represented the cultural, natural, and social features of Japan or a mixture of all of them.

The participating students varied in age between 7 and 14 and were divided into 3 categories. The number of finalists was around 80 students out of which 9 winners were selected and won 9 prizes.

- The first winner of each category received a 120 \$ prize;
- The second winner received a 110\$ prize;
- The third winner received a 100\$ prize;

Each prize was accompanied by a certificate of achievement.

The evaluation committee was composed of the following representatives:

- Mr. Nishikawa Kentaro from the Japanese embassy
- Dr. Jaoudat Abou-Jaoude from the Leba-Jica
- Sister Bahya Hanna and Ms. Gladis Dagher, N. Dame of the Carmel College
- Ms. Marah Morad and Mrs. Zeina Khalaf JICA office Syria/Jordan/Lebanon.





Demining Field Visit with H.E. Ambassador of Japan Mr. Matahiro Yamaguchi

With the Cooperation and Coordination of LEBA-JICA Alumni represented by Eng. Kamal Mokdad

A field Visit organized to MAG (Mines Advisory Group) Regional office In Nabatieh with H.E. Ambassador of Japan Mr. Matahiro Yamaguchi and Mr. Anwar Jammal Chairman of Jammal Trust Bank.

- First a Screening of Documentary presented by an officer of Lebanese Army barracks in Nabatieh Head quarter.
- Then a field visit to the MAG Demining area in Meiss El Jabal village with H.E. Ambassador of Japan Mr. Matahiro Yamaguchi and the Chairman of Jammal Trust Bank Mr. Anwar Jammal Which supports financially MAG to assist in demining.
- MAG team showing us the Action plan and the technical methods of demining from A to Z.
- At the end of the visit, H.E. Mr. Matahiro Yamaguchi and Mr. Anwar Jamal detonated several mines that were removed during the visit, followed by a village food lunch on site.



After this field visit, on January, 31, 2018, H.E. Mr. Matahiro Yamaguchi, Ambassador of Japan to Lebanon signed a new grant contract with Mr. David Willey, Country Director of MAG with a grant of USD 628,160, This project will benefit around 10,000 people living around the contaminated areas in Houla and Meiss El Jabal in Nabatieh, which will be used for agricultural and residential purposes.



Safety and security related to petroleum sources in Lebanon

By Petrochemical engineer Marwan Khadaj

Labor Inspector for protection and safety at the ministry of Labor



In 242010/8/ law Number 132 on Petroleum sources in the marine waters was issued. This law has a special value since it establishes the basis for regulating all types of petroleum activities in the Lebanese marine waters as well as in the preparation phases for extraction, production, storage, marketing of gas and petroleum. The law Number 132 also included strict safety, and protection regulation for petroleum and gaz.

Part seven of this law was on environment, security and health and included seven articles from 54 till 60 which explained how to deal with emergency situations, security zones, and how to suspend

petroleum activities as well as environmental protection and the procedures related to it.

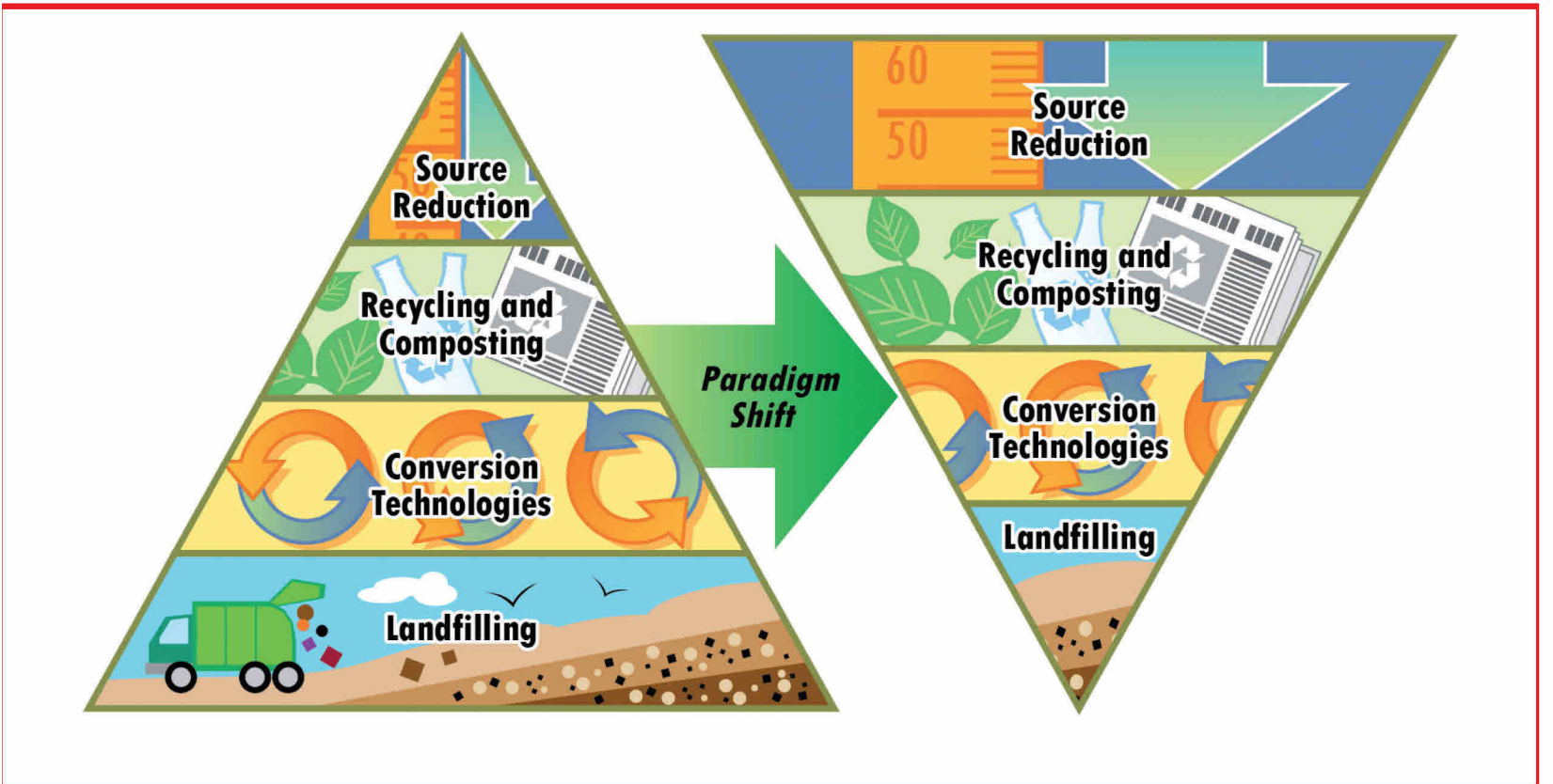
Article 54 focused on the proper use of petroleum activities within a high level of health and safety environment, while article 55 forced the extraction company to have clear plans related to facing emergency situations that workers might face at work. All these procedures should be done before starting work.

All this shows how important is the role of the ministry of labor has in meeting the gas and petroleum file in Lebanon and which can be summarized as follows:

1. The ministry of labor is an essential partner in the file of petroleum like any other ministries such as the Ministry of environment, defense, public work energy and power finance, etc.
2. The preparation of a special decree related to regulating protection, security, and safety in the petroleum and gas sectors is very urgent, and should be dealt with immediately, and that has already been identified through continuous participation in workshops with Norwegian experts in collaboration with the higher council for petroleum and gas.



السبل الفضلى لإدارة النفايات الصلبة في العالم العربي





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Regional Workshop on «Best Approaches for Solid Waste Management in the Arab Countries»



Message from President of LEBA-JICA

**Dr. Jaoudat
Abou-Jaoude**

Leba-Jica was established in 1998. It incorporates managers, engineers, specialists, and experts who have been placed in major professional positions in the Lebanese government, and have already completed professional and specialized training courses in Japan with the help and support of the Japanese International Corporation Agency (JICA).

The major purpose and goal of the Leba-Jica is to exchange experience in the cultural, scientific, economic and social fields with the JICA and in coordination with the Japanese embassy in Lebanon. It also aims at interchanging experiences within its members, and with the regional sister associations for the wellbeing of Lebanon the Arab countries and Japan.

In the old days people use to live in harmony with their surroundings. Their daily elements of use such as wood, cotton, wool, leather, and metal even stone were part of nature and biodegradable; in addition to that, their daily consumption off food was contained in reusable and biodegradable containers. As a result the solid waste was a minor issue and was resolved by nature as well as by the consumers through reuse and consumption in a different way.

The problem of Solid Waste has climaxed when people started to switch from an agrarian to an urban style of living. They started grouping in

concentrated geographic areas in the form of towns and cities. They started over consuming the natural resources as well using new materials that are not degradable such as plastic, rubber etc.

By over consuming natural resources, and creating left overs of waste, big amounts of residues were produced in the form of solid waste, and became a heavy burden on the environment.

Most of the solid waste comes from Residential, Industrial, Commercial, Institutional, Construction and Demolition, Municipal services, Agriculture, and Biomedical sources.

There are different methods of solid waste management. The following are some of the recognized methods: Sanitary Landfill, Incineration, Recovery, Recycling and Composting.

In Lebanon, the current legislations tackle mostly domestic solid waste commonly known as Municipal Solid Waste (MSW), while other types of waste are left to be treated by the private entities producing such waste, under the guidance and supervision of the concerned ministries as stipulated by applicable laws and regulations.

The concerned ministries and public institutions are working towards the promotion of an integrated



waste management plan that is aligned with the socio-political situation and that translates into concrete actions the desired waste management expectations, in synergy with sustainable development principles embedded in other national programs and policies, which will ultimately reduce environmental degradation as follows.

- 1- Adopt thermal decomposition and waste-to-energy technologies in large cities;
- 2- Engage the private sector and facilitate its tasks in the provision of Solid Waste Management Services.
- 3- Mandate the Ministry of Environment (MoE) and the CDR to merge their respective proposed plans, in synergy with what is agreed upon above;
- 4- Mandate the Ministry of Energy and Water to propose a legislation that entitles the private sector to produce and sell energy generated from waste;
- 5- Offer incentives to the municipalities that will host waste treatment facilities: thermal decomposition plants, processing stations, composting stations and landfills;
- 6- Mandate the CDR, in coordination with the MoE, to contract an international consulting firm to:
 - Select the most appropriate and proven solutions adapted to the Lebanese case (based on the spirit of the plan);
 - Develop the Request for Proposal (RFP) for the preliminary shortlisting of the thermal decomposition companies (Due diligence to short list only proven technologies);
 - Assess and classify companies;
 - Draft the RFP for the final tender;
 - Perform bids appraisal;
 - Monitor the implementation
- 7- Mandate the Ministry of Environment to contract an international consulting firm to control the workflow quality in accordance with the spirit of the plan and ensure good work progress;
- 8- Mandate the Ministry of Environment to hire a local consulting firm to conduct an

awareness and guidance campaign to gain public support for the thermal decomposition technique;

- 9- Vest the Cabinet with the power to oversee the work progress and secure necessary funds, and to learn from successful experiences and best practices of neighboring countries.

Main Challenges:

- One of the biggest challenges facing the household waste in Lebanon lies in landfill locations, whether they are ordinary dumps or landfill sites for final dumping following sorting and recycling; another challenge is dealing with waste before reaching the dumps. Therefore, the emphasis should be moved towards recycling and composting.
- Solid waste management constitutes also a great challenge from a financial perspective, in particular in a developing country like Lebanon, due to the absence of sufficient adequate regulatory legislations.
- The legislations on household solid waste management in Lebanon are shallow, contradictory and unclear, especially with respect to the role and tasks distribution between the concerned departments and ministries. A draft law on integrated waste management is currently underway.
- The Union of Municipalities, upon the administrative and technical support of the Ministry of Environment and the Ministry of Interior and Municipalities, should consolidate the efforts for the selection of locations for dumps and sorting and composting facilities. This will be achieved through the establishment of a constructive dialogue and consultation process with the civil society, who would obstruct projects implementation, if not involved.

With this much of information I want to conclude by thanking each and every one who participated in this workshop mainly the JICA, the Japanese Embassy and the entire sister associations who came from our neighboring countries.



**Message from
H.E. Mr. Matahiro Yamaguchi
Ambassador of Japan in Lebanon**

It gives me great pleasure to welcome you all at the opening ceremony of the regional workshop on “Best Approaches for Solid Waste Management in the Arab Countries” organized by LEBA-JICA under the patronage of the Ministry of Environment and in collaboration with JICA and the Embassy of Japan in Lebanon.

I find it impressive that several Arab countries meet in Lebanon today to discuss different approaches and strategies for the development of solid waste management in the region. This proves that the ever increasing solid waste is not only a local struggle but actually a worldwide problem that has been threatening our environment and causing irreparable damages to our planet.

I believe the purpose of today’s workshop is not to discuss the effect of this crisis on our communities but to find sustainable and innovative solutions for solid waste management. The practices of waste disposal and management might vary from a country to another but the end goal is to tackle the problem effectively all while being protective towards the environment.

Lastly, I would like to thank those who contribute to make this workshop happen and I hope that you will find the sessions informative and helpful in developing waste management strategies.

Thank you.



**Message from
Mr. Ken Imai
Senior Representative JICA**

Please allow me in opening of this Regional Workshop to express to you on behalf of JICA Syria Office our feelings of pride and honor for participating in such a valuable event.

In an era of rapid environmental degradation due to climate change, mass-scale urbanization, and declining quality of natural resources, the state of environment is of growing importance for communities not only health-wise but also for socio-economic opportunities and peacebuilding practices, to prevent potential conflicts over scarce resources.

All of us are very reliable for conservation of the environment. A healthy and attractive environment will lead to healthy people living in that environment. So, we consider environmental protection as a major guiding principle in JICA’s policy objectives.

In this regard, we JICA appreciate that discussions on “Best Approaches for Solid Waste management in the Arab countries” will be held between our friends. I hope participants will bring today’s information and discussion to each place so as to accelerate the movement to advanced waste management in the region with solutions and recommendations that help in the waste management system.

I would like to express my deep appreciation for the Embassy of Japan in Lebanon continuously providing the utmost cooperation to JICA and extending kind assistance to Leba-JICA, and continuous participation in Leba-JICA workshops.

Also, my deep thanks to Leba-JICA for their kind invitation and great arrangements to host this valuable workshop.

Ladies and gentlemen, thank you again for coming today. I hope you will find the workshop useful and inspiring, and for friends who come from abroad, I wish you interesting presentations I hope you all enjoy your stay in Beirut. Have a beautiful day.



The Message of His Excellency Mr. Tarek Khatib Minister of Environment presented by Engineer Adel Yacoub

Dear all it gives me great honor to represent His Excellency the Minister of Environment Mr. Tarek Khatib in this event and transfer to you his greetings and support for this partnership between the private and the public sectors which establishes the bases set by the protection of the Environment law.

Environment is life, and life is the most valuable thing a man can own. Thus each person should have the right to have a healthy and persistent environment, thus obliging us to keep it pure, and clean from anything that will destroy it.

The increase of population, and the alleviation of the standard of living, the urban, industrial, and agricultural advancement, as well as, the inappropriate use of solid waste collection, transportation, and treatment has led to a drastic increase of solid waste, and resulted in polluting all the environmental components such as land, water, air, and the overuse of the natural resources. As a result solid waste management has become a vital issue for the preservation of the public health and safety.

The cost for the deterioration of the environment in Lebanon due to mismanagement of solid waste was estimated to be around 66.5 million US dollars which composes around 0.02% of the total GDP in 2012. Based on that, the management of solid waste should start from the origin of its production, and ends in its elimination site in an appropriate way that does not cause any heavy burden on the economy or the society and without causing any pollution to the surface and underground water, the air, the soil, and the public health.

The ministry of environment in its vision, and continuous efforts to preserve the environment,

and to achieve sustainable environmental development, and to assure a healthy and stable environment, implement its role set by the applied laws. It is actually doing all it can in order to manage the solid waste starting from the source till the complete termination. This is done based on the sustainability principles, awareness, and transparency, and in cooperation and partnership between all the concerned parties managing this sector.

We here in our gathering crystalize the best requested cooperation image in an attempt to unify the opinions and spread the environmental awareness as large as possible, and to assure that the ministry of environment lends its arm to all the concerned parties in solid waste management, and puts all its abilities at the service of the environment and Lebanon. We also assure you our continuous readiness for a full cooperation with all the parties, for the aim of reaching the requested results, for the purpose of improving the solid waste sector, as well as, improve the safety of the environment and the quality of life in Lebanon.

Finally the Ministry of Environment thanks the JICA for all the continuous effort that it is exerting to assure safe environment in the Arab countries in general and Lebanon in particular and wishes that our workshop will reach the requested goals and that this approach will be the start of set of continuous workshops of dialogues between the Arab countries for the aim of exchanging expertise and learning lessons, wishing all the participating countries more success and safe environment.

Long live the participating members, the environment and Lebanon

Coordination Meeting Among JICA Alumni Associations in Syria, Lebanon and Jordan (JAAS, Leba-JICA, JAAJ)



Attendance:

Lebanon (LEBA-JICA)	Syria (JAAS)	Jordan (JAAJ)	JICA
Dr. Jaoudat Abou- Jaoude	Dr. Mousa Al Shahadat	Mr. Ali Sinjlawi	Ms. Marah Morad
Mr. Kamal Al-Mokdad	Mr. Bassam Al Sibaai	Mr. Ibrahim Tawalbeh	Ms. Zeina Khalaf
Mr. Antoine Ghorayeb			
Mr. Wissam Al Kanj			
Mr. Abdel Kader Sharamand			
Dr. Rahif Al- ayoubi			
Ms. Sabine Ghosn			

- 1- The meeting started by a discussion related to the proposed workshop which will be implemented in Beirut at the beginning of December 2017 on "Best Approaches for Solid Waste Management in the Arab Countries".
- 2- So all the attendants agreed on the importance of the topic of the workshop and confirmed that they are going to prepare together with other participating alumni associations, presentations that describe the real situation solid waste management in each country.
- 3- The participated members asked the possibility of the participation of JICA's expert to be a lecturer in the workshop in order to give idea about the Japanese experiences in Solid Waste Management.
- 4- The attendants agreed on the following topics related to the preparations of the workshop:
 - The workshop will take place in Beirut-Lebanon.
 - The proposed date of the workshop is December 1st
- 5- At the end of the meeting Leba-Jica chairman thanked all the participants for their kind attendance and cooperation.
- 6- All of the attendants confirmed the necessity of meeting again in other occasions.

Recommendations:

- All of the presentations will be prepared by JICA-Ex participant who worked or still working in the field of Solid Waste Management.
- Necessity of inviting a Japanese expert from JICA to transfer part of the Japanese experience in the field.



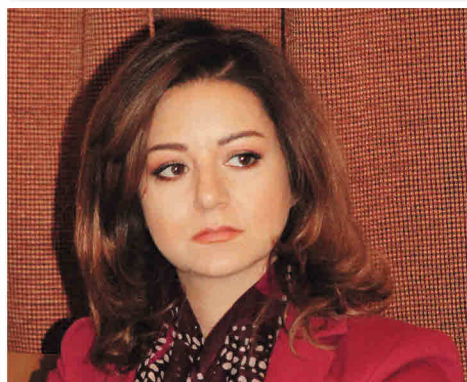
Dinner before the regional Workshop



Regional Workshop on “Best Approaches for Solid Waste Management in the Arab Countries”



- Dr. Jaoudat Abou-Jaoude president of LEBA-JICA
- Mr. Ken Imai, Senior Representative JICA
- His excellency Mr. Matahiro Yamaguchi Ambassador of Japan in Lebanon
- His excellency Mr. Tarek Khatib represented by Mr. Adel Yaacoub Ministry of Environment



Intervention of the Ministry of Environment

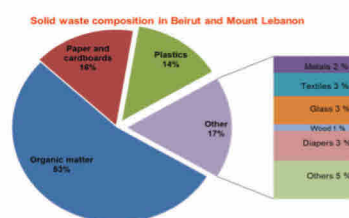
Eng. Sabine Ghosn Head of the Urban Environment Pollution Control Department at the Ministry of Environment

“Best Approaches for Municipal Solid Waste Management (MSWM) in Lebanon, tackling the following:

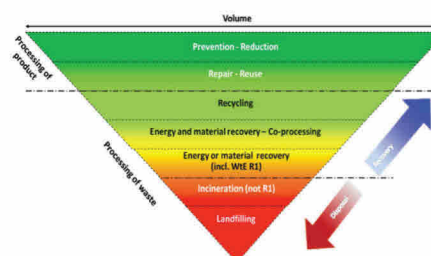
1. Background Information
2. MSWM Legislation, policies and strategies
3. Current MSWM in large cities
4. SWM Challenges in Lebanon
5. Treatment/Recovery options (integrated management hierarchy of solid waste)
 - 3Rs (Reduce, Reuse, Recycle)
 - Sorting at source
 - Mechanical Biological Treatment (MBT)
 - Recycling
 - Waste-to-Energy
 - Sanitary landfilling
6. Current initiatives and future plans
7. Recommendations

Lebanon produces more than 2.6 million tons of Municipal Solid Waste per year. On average, one person produces around 1.05 tons/day. The increase in solid waste generation is estimated at around 1.65%.

Mohafazaa	Waste Production (t/day)	Percentage of Total
Beirut	600	8
Mount Lebanon	2650	37
North + Akkar	1250-1400	20
Bekaa	950-1200	17
South & Nabatieh	1100-1300	18
TOTAL	6500-7100	100



The MSWM sector is facing challenges on all levels: Institutional, Financial, Social and Technical, and in order to secure a sound management of the sector, Integrated Solid Waste Management must be adopted as follows:



Current initiatives:

- MoE submitted a National strategy to the Council of Ministers (CoM), and it's still under discussion.
- Sanitary Landfills are still Operating for Beirut and Mt. Lebanon (excluding Jbeil)
- Capacity of Burj Hammoud and Costa Brava Landfills is nearing closure, however, the CoM requested the CDR to study their expansion.
- Other areas rely mainly on open dumping with some small sorting at source initiatives.
- The CoM approved the adoption of RAMBOLL study and the related Terms of Reference for future WtE projects
- Work is being done on the possibility of rehabilitation of priority dumpsites throughout the country.

Future Plans & Recommendations:

1. Issuing the SWM law which has been reviewed at the parliament and its applicable decrees in Lebanon which will answer the following:
 - Institutional framework (create an independent SWM board representing relevant administrations, PS, NGOs, Academic sector, ...)
 - Implementation of a Financing and Cost Recovery system based on the polluter pays principle
 - Implementation of a Monitoring system
 - Regulations and sanctions
2. Propose new incentives for municipalities that have centers for the treatment and disposal of solid waste within their cadastral zone.