Improving Solid Waste Management in Hotel Industry at Aqaba

July, 10th 2017 – December, 31st 2018
Assessment

SW Audit conducted for 15 hotel
And 18 restaurants

Training needs assessment for Hotels

2 Training needs assessment for the Public and private sectors

Phase 1: 4 (5) stars hotels
Phase 2: 8 (3&4) stars hotels
Phase 3: 18 restaurants and 3 (5) stars hotels
Estimated Waste Composition - Aqaba

Waste composition

- Food/organic: 50%
- Cardboard: 20%
- Plastics: 10%
- Metals: 5%
- Glass: 5%
- Paper: 5%
- Other: 5%
- Plastics: 10%

Source of generated solid waste in hotels

- Kitchens and restaurants: 67%
- Rooms: 33%
# Food Waste Assessment

<table>
<thead>
<tr>
<th></th>
<th>F.W(D.P)</th>
<th>F.W(Used)</th>
<th>Untouched</th>
<th>Total F.W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantities per day</td>
<td>879.29 Kg</td>
<td>1172.11 Kg</td>
<td>464.58 Kg</td>
<td>2515.76 Kg</td>
</tr>
</tbody>
</table>
## Problem Identification

| Hotel Management            | ASEZA                                      | Landfill Situation                                                      | Customers                                                                                      | Private Sector                                                                 |
|-----------------------------|--------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| No separation mechanism/recycling plan | Hotels pay a fixed tax, in return of waste collection services, that is based solely on their built area | Almost 100% of solid waste that gets collected (by a private company) is sent to the Aqaba landfill (even if it’s separated at source) | Bad cultural behavior (returned food in plates percentage is very high)                      | Lack of involvement of the private sector in the waste sector                     |
| Lack of orientation for employees on resources conservation          | no well-established governmental infrastructure for solid waste recycling in Aqaba |                                                                         | lack of responsibility of the local customers towards a sustainable society and environment   |                                                                                   |
Proposed Solutions (Action Plan & Policy Paper)

**Hotels management**
- Improve ingredient inventory
  - Attain accurate numbers of customers food consumption
  - Abandon the buffet and lean towards ordering from menus

**ASEZA cooperation**
- Provide a recycling plan / tools
  - Cooperate with collection company to regularly collect recyclables to their final destination
  - Assign a central area to store and separate dry waste items

**Customers behavior**
- Initiate an extra charge policy on leftovers from plates.

**Management plans**
- Composting facility
  - Centralized Composting Machine
- Anaerobic Digestion
- Landfilling (Current)

**Laws and Regulations**
- Consider changing the current waste collection scheme
Organic/food Waste Management options

1. Composting Facility
2. Compost
3. Donate the untouched
4. Anaerobic Digestion
5. Energy
Small to medium composting facility

- process will require a vast stretch of land to accommodate the storing and curing of the compost

- A proposed location for this station would be near the Aqaba landfill to avoid any nuisance to the public community.

- This plant can serve all of the city’s organic waste stream

- obvious issue regarding this option will be that of the capital and running cost
Composting Machine

- able to produce compost at its primary stage in only 24 hours using up a space of a parked automobile
- Continuous monitoring of moisture content, pH, temperature
- does not require any control of leachate or pre-adjustment of the underlying ground
- issues are related to the C:N balance which can be achieved by mixing paper waste with food waste

In Jordan there is only one machine that is working at the moment in the Queen Alia airport. The cost for 1ton/day machine will be approximately 100,000 JDs.
Donating the surplus food (untouched)

- Packaging and storing systems and quality assurance control are needed to insure the health risks of consuming expired food are kept to a minimum

- Some hotels are already recycling the untouched food to their employees and staff

A previous initiative in Aqaba took place during the holy month of Ramadan, and it was a successful one that occurred without any incident and with lots of donated packaged food.
Short Term Impact

• ASEZA’s willingness to consider changing the current waste collection scheme.

• Setting pilot plans for hotels to reduce 30% of their generated waste.

• Empowering CBOs and contributing to their financial sustainability by giving them the tools for utilizing waste as an opportunity.

• Building the capacities of professionals and individuals from the private sector on new technologies for generating Energy from Waste.

Long Term Impact

• Waste generated from hotels reduced.

• Composting organic waste through a composting machine owned by ASEZA/private sector in collaboration with ASEZA.

• Waste collection contracts includes recycling components.

• Pilot plans for hotels replicated and used by other hotels.

• Reports to be used in future projects as references.
Thank You!