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# be'ah - Waste Management in the Environmental Age

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A Royal Decree was issued in 2009 granting be'ah the complete mandate to manage waste across Oman. be'ah set the following key goals to achieve its vision of conserving Oman's environment for future generations: controlling the damage by closing existing illegal dumpsites, establishing proper waste management infrastructure including transfer stations and engineered landfills compliant with Environmental Protection Agency (EPA) standards, enhancing the sector by developing initiatives to recover energy and material value from various waste streams in collaboration with key stakeholders and promoting in-country value via the utilization of local resources, supporting SMEs, generating employment opportunities and attracting foreign direct investments into the country.

The key focus of be'ah's waste management strategy is to shift from waste management in a linear economy to resource management within a circular economy following successful examples and best practices from developed countries. The primary objective of be'ah waste management system is to reduce the negative impact of waste on health and the environment. To meet this objective, it is crucial to:

- Reduce waste generation at source
- Promote reuse of disposed resources that have not completed their life cycle
- Promote energy recovery from mixed municipal solid waste and biological treatment of organic waste
- Promote material recovery and recycling
- Raise awareness about the use of recyclables
- Ensure treatment and disposal of waste have no adverse impact on human health and environment



Given the above, be'ah has taken proactive steps to collaborate with key stakeholders for off-taking the recycled material as raw material for their industrial processes. For example, continuing its efforts to instill a culture of sustainability in and out of its service stations, Oman Oil Marketing Company (OOMCO) signed an agreement with (be'ah) to launch the Reverse Vending Machine (RVM) initiative.

This collaboration establishes a mutually beneficial partnership that aligns OOMCO's core values of social and environmental responsibility with be'ah's strategic goal of achieving landfill diversion and promoting circular economy drives across the Sultanate.

In addition, as part of its mission to achieve the circular economy approach and to promote recycling and waste recovery initiatives, (be'ah) has signed a strategic partnership agreement with Omantel to foster the recycling culture among communities in Oman through the deployment of Reverse Vending Machines (RVMs) across Muscat. The agreement aims at strengthening ties between be'ah and Omantel where the latter achieves its CSR goals and be'ah reaches its mission to diversify waste management approaches aligned with the 2040 strategic targets to retrieve value from different waste streams.

On the other hand, be'ah has put in place a strategy for commercial collection supported by the appropriate regulatory framework for waste streams such as construction and demolition waste (C&D), lead acid batteries (LAB) and waste electric and electronic equipment (WEEE). The strategy aims at supporting Oman's economy by providing the private sector with investment opportunities in the operations of collecting and processing (recycling) these waste streams. In this regard, be'ah signed commercial collection agreements with major stakeholders such as Omantel, Petroleum Development Oman (PDO), Oman LNG, Oreedoo, Mwasalat and other commercial entities that generate large quantities of these streams.

be'ah has also worked on a long term strategy to manage end of life tires (ELT), a special stream of waste that incurs an annual growth rate of 5%. Since landfilling ELT can be hazardous and entails risks of fire, be'ah signed a strategic partnership agreement with Oman Cement Company (OCC) to utilize shredded tires as alternative fuel in their kilns thereby promoting the use of alternative energy and reducing dependency on natural gas. Moreover, several start-ups and SMEs signed ELT collection contracts to cut and bale or shred ELT into crumbs, which is used as raw material to manufacture local rubber products such as sports mats, or other products related to civil and industrial sectors.

Organic waste on the other hand is biological waste that is currently disposed in landfills mixed with other household waste streams. be'ah finalized feasibility study for establishing biogas plants at Barka Landfill, Sultan Qaboos University and Omani Agriculture Association.

Anaerobic digestion is a biological technology used for biogas production as an alternative source of energy. Biogas then can be used for electricity production or to be upgraded to a biofuel. A Build Operate Transfer (BOT) business model is to be adopted for commissioning the biogas plant.

Similarly, be'ah is also working on developing the contractual structure for procuring a large scale Waste to Energy Plant that would treat around 4,000 tons per day which amounts to more than 60% of the currently landfilled MSW to generate at least 140 MW/day of electrical power to be connected to the main grid. This project on its own will meet one of be'ah's core strategic goals in terms of value recovery, besides creating additional economic and social benefits including job creation and attraction of foreign direct investments into the country. This project will be tendered in 2021 following a BOT model.

be'ah has also set plans to divert other organic waste from landfills including fish waste and used cooking oil waste. Improper disposal of fish waste can pose a potential risk to the environment, public health and safety. An Omani fish waste management & recycling SME approached be'ah to develop a plant with technology adopted from New Zealand to recycle fish waste into organic liquid fertilizers and other products and replace chemical fertilizers. be'ah's main objective with this project is to encourage local production

(ICV), value recovery, promote private sector participation, adopt best disposal practices and finally promote environmental protection and public health and safety.

Waste management is not just a human-centric sector. It has impacts on the environment and local biodiversity and wildlife as well. Many animals rely on landfills for food and our facilities. Raptors flying around in large numbers at some of be'ah's facilities for food are a common sight.

The most notable of them are Egyptian Vultures and Steppe Eagles, both listed as endangered by the (IUCN) Red List of Threatened Species. Collaborations and studies carried out by the Environmental Society of Oman (ESO), Office for Conservation of the Environment (Diwan) and Dr Mike McGrady, have recorded large sightings of these birds at locations such as Al Multaqa, Tahwa, Masirah and Raysut.

With be'ah implementing EPA-standard landfill designs, food is becoming scarcer for such birds, unlike in the past when it was readily available at traditional dumpsites. be'ah noticed a decline in their local population and an increase in migration to neighboring countries in search of food.

After studying international conservation practices, be'ah developed the concept of Raptor Restaurants (a small site at a landfill where safe food, such as clean carion from local slaughterhouses, is provided for the birds).

The pilot project implemented at the Thumrait landfill in 2019 showed positive results, with bird numbers increasing from under 20 to around 500. Following this success, be'ah floated a tender to establish three such sites in Al Multaqa, Tahwa and Raysut. These sites are expected to be constructed and operational by the start of next year through a local supplier.

As Oman's economy grows, be'ah will continue to play its part in working behind the scenes to present and preserve the Sultanate's beautiful environment. be'ah has a huge responsibility in its hands as the future depends on sustainability policies that do not leave any stakeholder out.

The people of Oman are the inspiration for be'ah to tirelessly work towards making the environment safer and healthier for them and for future generations by collaborations that have high intrinsic value and global best practices in waste management sector.