

TRANSFORMING OMAN

Creating a Sustainable Future

2012-2018

Creating a Sustainable Future
2012-2018



His Majesty
Sultan Qaboos Bin Said

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CONSERVING OUR BEAUTIFUL OMAN



EXECUTIVE MANAGEMENT



Eng. Tariq Ali Al-Amri
Chief Executive Officer



Hilal Khalfan Al-Noumani
Executive Vice President
Municipal Solid Waste



**Sheikh Mohammed
Sulaiman Al-Harthy**
Executive Vice President
Strategic Development



Mohamed Moosa Ibrahim
Sector Head
Corporate Support
Services

CEO's Message

be'ah's purpose is quite straightforward and it is to move Oman towards sustainable waste management practices. Our passion is clearly articulated and defined by our vision, which is 'to conserve the environment of our beautiful Oman for future generations'. Our success is dependent on our ability to share this passion with all of our stakeholders including communities throughout the country and establish a positive engagement with them. Reaching out across our beautiful Oman will enable us to adopt more effective waste management practices and behavior. I am very pleased to report that we have made great progress in our journey so far.

Solid waste management is a global challenge for authorities in all countries including ours. These challenges are due to the increasing waste generation, the high costs associated with its management, its impact on countries' financial resources, and the lack of awareness regarding waste management best practices, which affects the efficiency of waste operations and management. In Oman, we generate approximately 2 million tons of waste every year, an average of 1.2 kg per person every day.

Our strategy is inspired by our vision and defined by our goal to overcome every challenge that the country is facing in the waste management field. We have implemented our plans and designed our services in extremely challenging circumstances stemming from the prevailing economic situation, lack of effective policies, and the absence of legislation and regulatory framework. As a result, we adopted a phase approach strategy in order to achieve these goals. Meanwhile, there is a strong collaboration with all concerned governmental authorities to take this sector to be world class one. The current economic difficulties have caused delay to the rollout of some elements in our plan, but I strongly believe that we will achieve all of our goals with the support of our stakeholders in the government, the industry and the wider community.

Commitment to Success

To achieve our mission, we have set a clear objective: to deliver a world-class integrated waste management system. We are competent to do so by working collaboratively with various governmental entities, carrying out streamlining processes, utilizing most efficient technologies, building passionate talent, and partnering up with best players in the field. Being 100% committed to our end goal is also

key in achieving our mission.

In terms of controlling the damage caused by legacy practices, be'ah closed down over 200 traditional dumpsites across the Sultanate, which had been a source of environmental and adverse health effects and a cause of community discontent.

The strategy for developing the Municipal Solid Waste sector involves setting up infrastructure and services in all governorates across the country to ensure uninterrupted 24/7 waste management service. This includes outsourcing 10 contracts to cover all governorates, establishing 10 landfills and up to 18-25 transfer stations. We are currently operating in 8 governorates in addition to Seeb in Muscat and our services will extend to cover every household in Oman by the end of 2019.

The Hazardous Waste segment has also witnessed substantial transformation. Our waste treatment services for the healthcare sector have expanded to cover almost all waste generated in all governmental and private hospitals, and private clinics using a network of 3 treatment facilities with 2 different technologies and an efficient collection and transportation system. We are currently treating industrial hazardous waste, which is also poised for major transformation with the establishment of Integrated Hazardous Waste Treatment Facilities that shall bring a sustainable solution for the treatment of industrial hazardous waste and provide the required support for our industrial sector. Our strategy of treating this type of waste involves setting up an industrial waste treatment facility in North Al Batinah and in Duqm. It also involves commercialization of the industrial waste services by outsourcing the operations of facilities and supporting Small and Medium Enterprises for the collection and transportation of industrial waste.

Our waste diversion strategy aims at diverting 60% of generated waste from landfills by 2020 and 80% by 2030. To achieve this goal, be'ah is pursuing many plans that focus on reducing the waste generated, introducing and developing the recycling and reuse of many types of waste streams, and recovering lost value in waste through several projects, such as waste to energy and waste to steam projects. We have completed our feasibility study for the waste to energy project and signed a memorandum of understanding with PDO for the development of waste to steam project for the application of enhanced oil recovery. We also intro-

duced a Private Sector Investment; the Lead Acid Batteries recycling plant in Ruysal Industrial Area, and we are working on developing the collection system for this waste stream.

We are also working on developing the recycling systems for construction & demolition waste, and end of life tires. In addition, we are working with some private investors in developing plastic and other types of waste recycling activities.

The numerous success stories and lessons gained since 2007 have strengthened our deep connections with all our stakeholders including the community. We have reached over 40,000 students in 2018 alone through various awareness programs. We have also initiated a training program to develop young Omani talent as part of our commitment to society.

Internally, we consider our employees to be our most valuable asset. We continue to invest in our in-house capability and in assessing alternative sustainable policies and initiatives to meet our goals in a timely and robust fashion. Our people remain at the core of our business and we will ensure that they remain on the cutting-edge, by offering excellent professional and technical training to them.

Guided by our Values

Sustainability is about tipping the right balance. Businesses and economies are at risk if our performance falters. At be'ah, we have the opportunity to mitigate those risks by leading the change and positively affecting our communities, country and the world.

To ensure our goals are achieved, it is important that we approach sustainability not as a tactic or a single objective, but as a manner of thinking about systems and processes, uncovering more efficient and innovative ways of handling issues and looking at the future landscape and markets for opportunities.

Our job is never easy, but always rewarding. So, I would like to take this opportunity to thank every member of the be'ah team for their hard work, dedication and commitment, for without their efforts we would not be able to secure our future generation's health and keep our environment protected. With a bright future ahead, and under the wise

leadership of His Majesty Sultan Qaboos bin Said, we are ready to safeguard this beautiful nation and our beautiful planet.

Thank you



Eng. Tariq Ali Al Amri
Chief Executive Officer





WASTE MANAGEMENT

Transforming The Future By
Reconciling The Past

- Waste and the Concept of Circular Economy
- Circular Economy (CE)
- Waste Management Hierarchy
- Waste Management in Oman
- Challenges

WASTE AND THE CONCEPT OF CIRCULAR ECONOMY

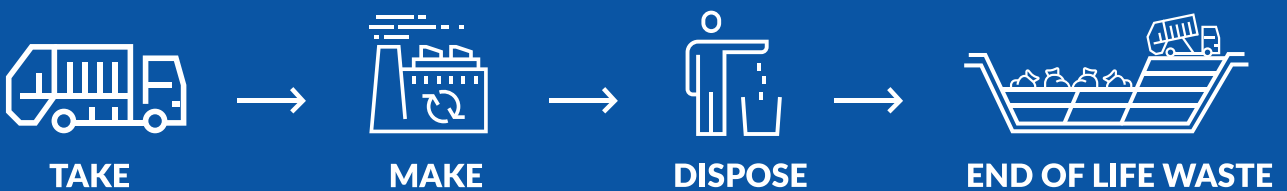
The rapid development of industries and consumerism that accompany population growth is posing challenges in maintaining a sustainable environment. The legacy practices adopted by the country were unable to cope with the volumes of waste generated by an increasing urban population, causing a huge impact on the environment and public health. Waste, in general, negatively impacts plants, animals, and surrounding lands. The littering of materials, such as plastic bags and bottles is highly hazardous for animals as they mistake it for food. Plastic bags found in oceans can lead to the extinction of many species. Implementation of inefficient systems to clear, clean, and maintain the surrounding lands create unnecessary costs for governments. It could easily be avoided with more sensible regulatory solutions laying the ground for sustainable waste management practices.

The Sultanate of Oman is experiencing urbanization, industrialization and economic growth, which has resulted in excessive waste generation. As the adverse impacts of those on the environment and public health evolve, so do the efforts of combating them by determining appropriate waste management and treatment options in an attempt to create effective, streamlined, and sustainable waste management practices for the country.

The Sultanate of Oman has developed a waste management roadmap adopting a circular economy approach which puts emphasis on designing a system that achieves the optimization of natural resources ecosystems in contrast with the concept of linear economy (take, make, consume and dispose) that takes advantage of abundant natural resources and easy availability of materials.

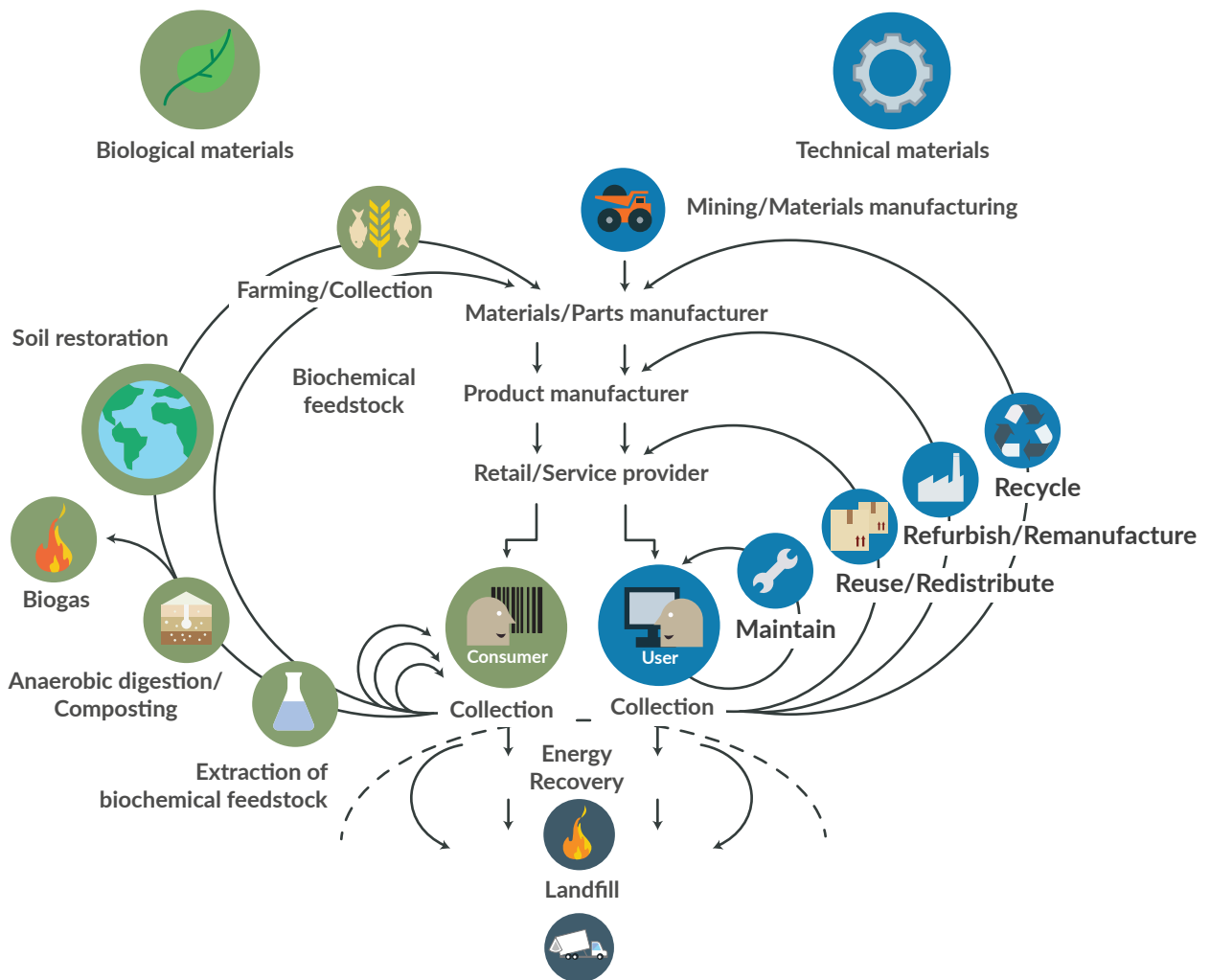
Linear Economy

The concept of the linear economy is based on the fact that waste, as a result of the production process, is discarded into the environment. The concept is based on the principle: 'take, make, consume and dispose' and it assumes abundance of natural resources and easy availability of material.



CIRCULAR ECONOMY (CE)

Relies on an industrial system designed and purposed to be restorative and regenerative, and to ensure either very little or no waste ends up in landfills. The CE concept differentiates between consumed products of biological nature and calls for a regenerative approach in dealing with products by extracting the product's chemical feedstock using the digestion process to extract biogas and digestants rich in nutrients and release them back into the biosphere.



*The Circular Economy (Ellen MacArthur Foundation, 2012, p.24).

“THE CENTRAL OBJECTIVE OF WASTE MANAGEMENT IS TO REDUCE THE HARMFUL IMPACTS OF WASTE ON HEALTH AND THE ENVIRONMENT.”



WASTE MANAGEMENT HIERARCHY

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:

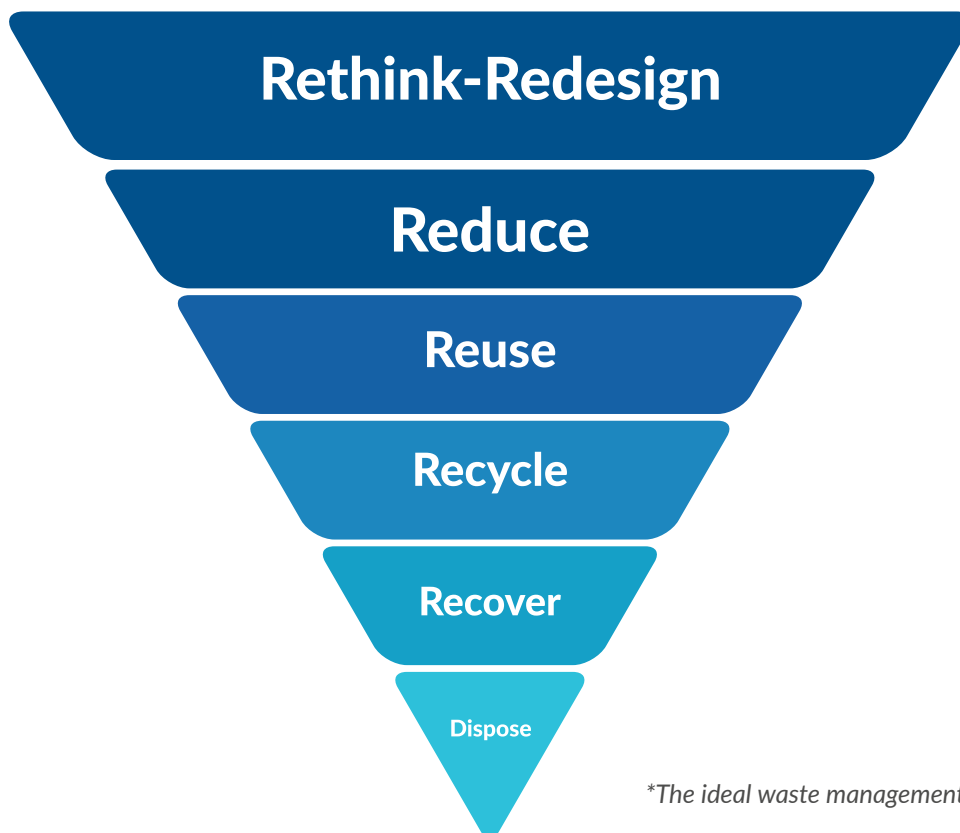
- Prevent waste generation
- Promote reuse of waste
- Promote biological recovery and recycling
- Raise awareness about the use of non-recyclable waste
- Ensure treatment and disposal of waste have no adverse impact

The legacy Waste Management practices which were followed in Oman include a four-step option:

- Waste disposal
- Minimal recycling
- Reuse
- Reduce as the least common practice

The ideal waste management hierarchy aims at placing the redesigning of materials for long-term use on top and waste disposal as the least preferred option. This ideology needs to be promoted in the Sultanate.

Waste Management Hierarchy



**The ideal waste management hierarchy*

WASTE MANAGEMENT IN OMAN

2.1 **MILLION**
TONS OF WASTE
GENERATED IN
2018 

Background

In Oman, waste management practices have traditionally mirrored the linear economy model. In 2018, an estimate of 2.1 million tons of municipal waste were generated across the country*. Open dumping of waste is widely prevalent in the country, and collected solid waste is mostly dumped in traditional dumpsites without any treatment or segregation. The nascent recycling industry includes small operators, who sort and recycle material in unprotected environments thereby increase risk to people and the environment.

Municipal waste generated by households, restaurants, hotels and other establishments is collected and transported to landfills and dumpsites.

Healthcare waste is transported and disposed either at incineration facilities or at dumpsites.

Industrial hazardous waste is either stored or exported for treatment. Part of the waste may end up at dumpsites.

Other types of waste such as Waste Electronic Electrical Equipment (WEEE), End-of-Life Tires (ELT) and Construction and Demolition Waste (C&D) are either transported to dumpsites or exported.

Waste Management Framework in Oman

For many years, waste management in Oman was controlled by various local municipalities in conjunction with the Ministry of Regional Municipalities and Water Resources. Healthcare waste was primarily regulated by the Ministry of Health, while the Ministry of Environment and Climate Affairs served as an important environmental regulator.

**IN 2012
THERE WERE
OVER 300 DUMPSITES
SCATTERED AROUND
THE COUNTRY**



Infrastructure

In 2012, the waste management infrastructure in Oman comprised more than 300 dumpsites across the country, 2 transfer stations (waste moved from smaller collection trucks to large semitrailers), 2 landfills (for waste disposal) and an exclusive healthcare waste treatment facility (incineration of specific healthcare waste).



**1 ENGINEERED LANDFILL
1 SANITARY LANDFILL**



2 TRANSFER STATIONS



**1 HEALTHCARE WASTE
TREATMENT FACILITY**



TRADITIONAL DUMPSITE



CHALLENGES

Some of the challenges of the waste management sector faced in the past:

- Absence of a strategic master plan
- Inadequate laws and regulations
- Lack of integrated systems, resources and infrastructure
- Absence of a single managing entity
- Lack of co-ordination among stakeholders
- Reactive approaches leading to isolated solutions
- Inadequate waste-related data and records
- Lack of skilled and experienced waste management workforce

IN 2009, A ROYAL DECREE GRANTED be'ah THE LEGAL STATUS AND OFFICIAL EXCLUSIVE MANDATE TO UNDERTAKE SOLID WASTE MANAGEMENT IN THE SULTANATE OF OMAN.

Article 1: "Oman Holding Company for Environment Services SAOC an (Omani Closed Stock Company fully owned by the government) undertakes implementation of the government's policy with regard to the waste sector, management and operation of the sector's activities in accordance with the sector's strategy being planned by the National Economy Ministry".



TRANSFORMING OMAN

Through an Integrated Waste
Management System

- About be'ah
- be'ah's Establishment and Journey
- Vision and Mission
- Strategic Goals
- be'ah's Values
- be'ah Sector Building Stages

ABOUT be'ah

In 2006, a National Strategy Report developed a cohesive plan to address the traditional waste management system, which primarily relied on dumpsites and landfills that lacked safe disposal standards. The Draft Strategy Report led to the establishment of Oman Environmental Services Holding Company (be'ah) in 2007. The Royal Decree (46/2009) granted be'ah the legal status and official mandate to undertake solid waste management in the Sultanate of Oman. Subsequently, be'ah took over the Healthcare Waste Treatment Facility and the company's budget was approved by the Ministry of Finance in 2012 to bring the goals to fruition.

Guided by the mission and tasks assigned under its mandate and the principles and requirements highlighted in the report, be'ah aspires to establish sustainable waste management practices in-line with international standards, provide adequate infrastructure to meet the waste management demand of the country, ensure efficient waste management services and raise the level of public awareness about waste management.

"LAY THE FOUNDATION FOR AN INTEGRAED WASTE MANAGEMENT SYSTEM AND THE OVERALL STRATEGY WITHIN A SPECIFIC TIMEFRAME (ON THE LONG & THE SHORT TERMS), BUDGETS, TARIFFS AND REQUIRED RESOURCES".

– THE NATIONAL STRATEGY REPORT

Responsibilities

Restructure waste management activities by streamlining, commercializing and privatizing the waste management sector in Oman.

Proposed Holding Structure

be'ah has proposed a new holding structure with two key subsidiaries which provide comprehensive services in Municipal Solid Waste and Industrial Waste.

Municipal Solid Waste

Subsidiary is responsible for ensuring efficient collection, transportation, treatment and disposal of municipal solid waste through state-of-the-art landfills, transfer stations, recycling centers and waste management services within the Sultanate.

Industrial Waste

Subsidiary aims to tackle any potentially hazardous waste arising from household, commercial, industrial, and agricultural sources using safe disposing methods.

be'ah has developed a National Industrial Waste Management Strategy, which addresses all types of industrial waste in a comprehensive and integrated approach.

be'ah's ESTABLISHMENT AND JOURNEY







VISION

To **conserve** the environment of our beautiful **Oman** for **future generations**.

MISSION

Together we develop the Waste Management Sector in Oman by providing safe, efficient and most economically and environmentally sustainable approaches in innovative ways, thereby contributing to the overall economy of the Sultanate.

STRATEGIC GOALS

be'ah is committed to its long-term strategic goals whilst being adaptive to the current needs of the Sultanate.

Damage Control

One of the current and immediate priorities for be'ah is to curtail and eventually close down open dumpsites that cause harm to the environment. be'ah is aggressively working on building the required municipal solid waste infrastructure, including landfills and transfer stations, and establishing the necessary infrastructure for proper treatment and disposal of hazardous and healthcare waste.

Structure Waste Management Services

be'ah outsources waste management services to specialized companies with proven experience and great ability to drive efficiency and compliance with high service standards and environmental guidelines. As it continues to expand its capabilities and capacity, be'ah will be instrumental in bringing its services through its next phase of growth by providing integrated municipal waste management services for governorates, including waste collection, transportation and treatment. Additionally, be'ah is working on developing a diversion strategy for different waste streams, by establishing recycling facilities and creating a major national project whereby municipal solid waste will be incinerated to generate energy.

Develop the Waste Management Sector

By raising the level of waste management services in the country, be'ah plans to attract local and international investors and talented resources for further sector development.

Support Oman's Economy

In the framework of all its projects and operations, be'ah is committed to support Oman's economy by maximizing in-country-value, whether by giving priority to experienced local contractors and offering investment opportunities to local investors and Small and Medium Enterprise (SMEs), or by creating job opportunities for nationals.

be'ah's VALUES



Safe

Ensure minimal risk to the environment, service providers and the community.



Efficient

Identify, develop and implement optimal strategies and solutions in terms of effectiveness, cost and practicality.



Sustainable

Educate, motivate and empower the sector and the community to reduce, reuse and recycle.



Innovative

Harness new technologies and best practices for continuous improvement.



Honesty

We believe in transparency; we believe that to be successful, honesty and transparency are crucial, especially when it comes to our stakeholders.



Respect

We commit to treat others as we expect to be treated; we embrace each individual's unique talent, and value their diverse experience.

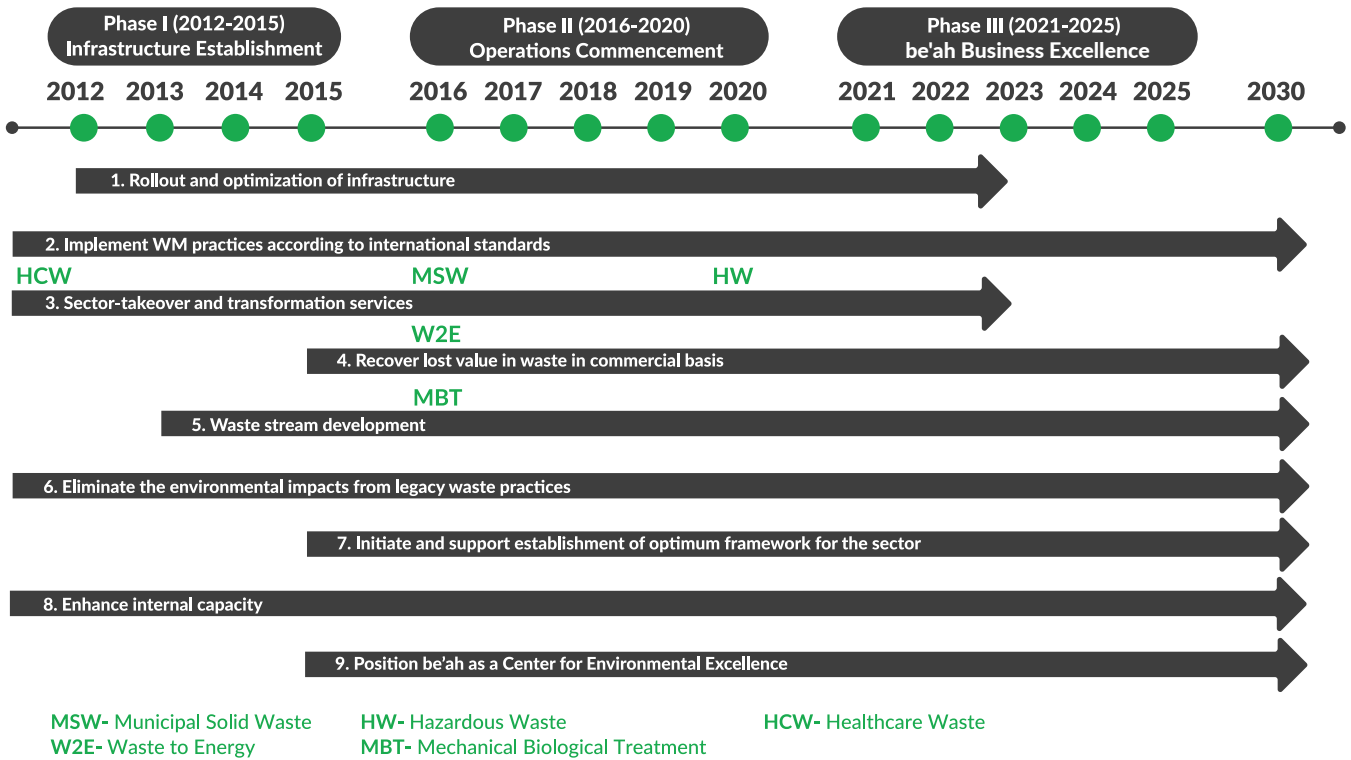


Inclusiveness

We appreciate diversity; diversity among employees and recognition of all individuals will always be our priority.

be'ah SECTOR BUILDING STAGES

The Corporate Strategic Plan prioritized projects that should be addressed on the early stages of the plan implementation, followed by long-term implementation strategies to achieve be'ah's long-term goals. be'ah's strategic direction is divided into several stages, where Phase I (2012-2015) focused on building the infrastructure, Phase II (2016-2020) focuses on the operations and moving forward, and Phase III (2021- 2025) will highly focus on excellence.



Infrastructure Establishment (2012-2015):

be'ah worked towards Sustainable Waste Management Practices to address specific urgent issues, while establishing the required infrastructure and support system for the industry. Government of Oman's 8th five-year Plan was mainly allocated to water infrastructure, construction of roads and airports, seaports, agriculture, marine fishing, sanitary drainage systems, sports and youth as well as communication and information technology. Even though waste management utilities were not specifically mentioned, it was assumed that these are covered under various urban development programs. Substantial capital investments from government have been allocated to improve and develop the current waste management system in Oman.

The first phase of be'ah's development had been directed towards restructuring the sector and establishing an infrastructure designed to meet the best standards of global waste management hierarchy, which starts by reducing waste generation, recycling, waste value recovery and finally, disposing the rest of it safely. be'ah's main focus at this phase lies on the insistence to eliminate traditional waste dumping processes and random dumpsites deployment across the Sultanate as they are considered to be a source of environmental damage to the biosphere.

Therefore, be'ah developed a plan to close all major traditional dumpsites and accelerating the process of rehabilitation and reclamation of these sites.

The development of this sector can only be achieved through qualified workforce provided with all the causes of success, such as a suitable work environment, a clear vision and specified goals, and emotional connection with the company's vision. However, due to the scarcity of qualified workforce, the company took upon itself to develop and build the capacity of the Omani workforce that will be the key element to the restructuring of the sector and building it according to international environmental standards.

Operations Commencement (2016-2020):

Moving from implementing sustainable waste management practices to optimizing, operating and aligning waste management operations and services with international standards. The 9th 5 Years Plan for Oman (2016-2020) plans under the Vision 2020 economic programs, reflects prudent and realistic goals. It aims at cutting non-core expenditure in favor of additional attention towards investment spending in key programs and projects. Private sector role is the backbone of the plan and the government has already been engaged in supporting this view through either Public-Private Partnerships (PPPs) or providing additional facilities.

Yet the 9th 5 Years National Plan maintains focus on economic diversifications, welfare and enhancement of social benefits, and at the same time on the drive to boost the private sector. To support this view, 5 prime sectors have been identified: manufacturing, transportation and logistics, tourism, and fisheries and mining. Over 500 programs and policies are to be activated in relation to these sectors.

These five sectors represent untapped potential and the country's determination to diversify its economy. Moreover, these sectors have the ability to generate significant numbers of jobs, bearing in mind the low Omanization rate.

be'ah faced extraordinary challenges due to finan-

cial constraints caused by declining oil prices which led the government to take measures to cut budgets across many sectors. However, the government has been extremely supportive and has been working in tandem to ensure plans move forward in spite of the challenging economic scenario. Owing to this, be'ah took certain measures without impacting its commitments toward sector takeover timelines and has been looking at innovative ways to stay on course towards building the infrastructure for a sustainable future. At the same time be'ah has set ambitious targets to reduce the amount of municipal waste disposed at landfills by diverting 60% of MSW by 2020 and 80% by 2030. Plans are underway to setup energy and fuel recovery plants to support the water generation sector, oil & gas sector, and heavy energy reliant industries.

be'ah's strategy focuses on supporting Oman's economy by outsourcing all its operations and supporting private sector initiatives for collecting and processing waste which can be recycled, such as Construction and Demolition Waste (C&D), End of Life Tyres (ELT), Lead Acid Batteries (LAB) and Waste Electric and Electronic Equipment (WEEE). be'ah will continue collaborating with Ministry of Environment and Climate Affairs (MECA), to review the current legal framework and regulations for waste management and work towards establishing a new framework as per the Government's policy for this sector. be'ah is also working towards setting up an "Environmental Center of Excellence" to take advantage of its expertise in waste management in order to foster applied research and development and build the sector's capacity.

be'ah Business Excellence (2021-2025):

Moving forward from commencing all solid waste management across Oman, the National Plan highly focuses on achieving its strategies for the renewable energy. Accordingly, be'ah will focus towards fully optimizing and achieving excellence in its waste management practices by recovering the lost value in waste.



AL MULTAQA LANDFILL, AL AMERAT



MUNICIPAL SOLID WASTE

Transforming The Old and Pursuing
New Ideas

- Municipal Solid Waste (MSW)
- Municipal Solid Waste Service Strategy
- Service Contracts
- Waste Management Operations
- Core Infrastructure for Municipal Waste
- Outlook

MUNICIPAL SOLID WASTE (MSW)

be'ah is committed to creating a roadmap of excellence by working assiduously towards building a sustainable waste management ecosystem and building an infrastructure that is streamlined and successful.



Traditional dumpsites are areas where waste is openly dumped without regard to health and safety of the people and the environment. The practice of open dumping can lead to various environmental and health hazards.

be'ah is closing down all traditional dumpsites and replacing them with engineered landfills, where

feasible. These cutting-edge landfills, which are compacted and lined, are designed to accept municipal solid waste for final safe and secure disposal, thus minimizing the risk on people and the environment.

Transfer stations are also being built where waste can be stored and stacked before being transported to final disposal at engineered landfills.

MUNICIPAL SOLID WASTE SERVICE STRATEGY

The Municipal Solid Waste Service strategy aims at planning, designing, and developing the waste management infrastructure and overseeing waste management services and operations across the country.

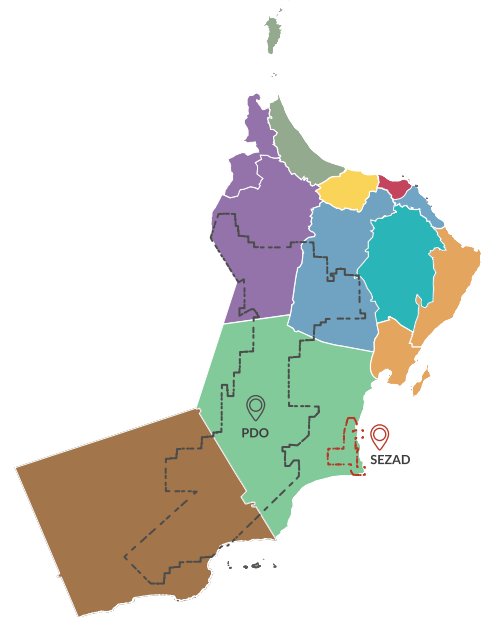
Service takeover refers to the transfer of ownership and control of government assets and operations related to waste management to be'ah as per Royal Decree (46/2009).

SERVICE CONTRACTS

be'ah municipal solid waste services takeover strategy can be summarized as follows:

- Dividing the service area into 10 separate contracts and 2 special contracts (The Special Economic Zone Authority at Duqm (SEZAD) and Petroleum Development Oman (PDO)):
 1. All contracts to be outsourced to private operators with relevant experience.
 2. Contracts will enter into force only after infrastructure (landfills and transfer stations) is made available and operational in contracted areas.
- Establishing an infrastructure of 11 engineered landfills and up to 25 transfer stations in accordance with the international waste management environmental standards.

 Dhofar	 South Al Sharqiyah & Mahout
 Muscat 1	 Musandam & North Al Batinah
 Muscat 2	 Al Buraimi & Al Dhahirah
 Al Dakhiliyah	 South Al Batinah
 North Al Sharqiyah	 Petroleum Development Oman (PDO)
 Al Wusta	 The Special Economic Zone Authority at Duqm (SEZAD)



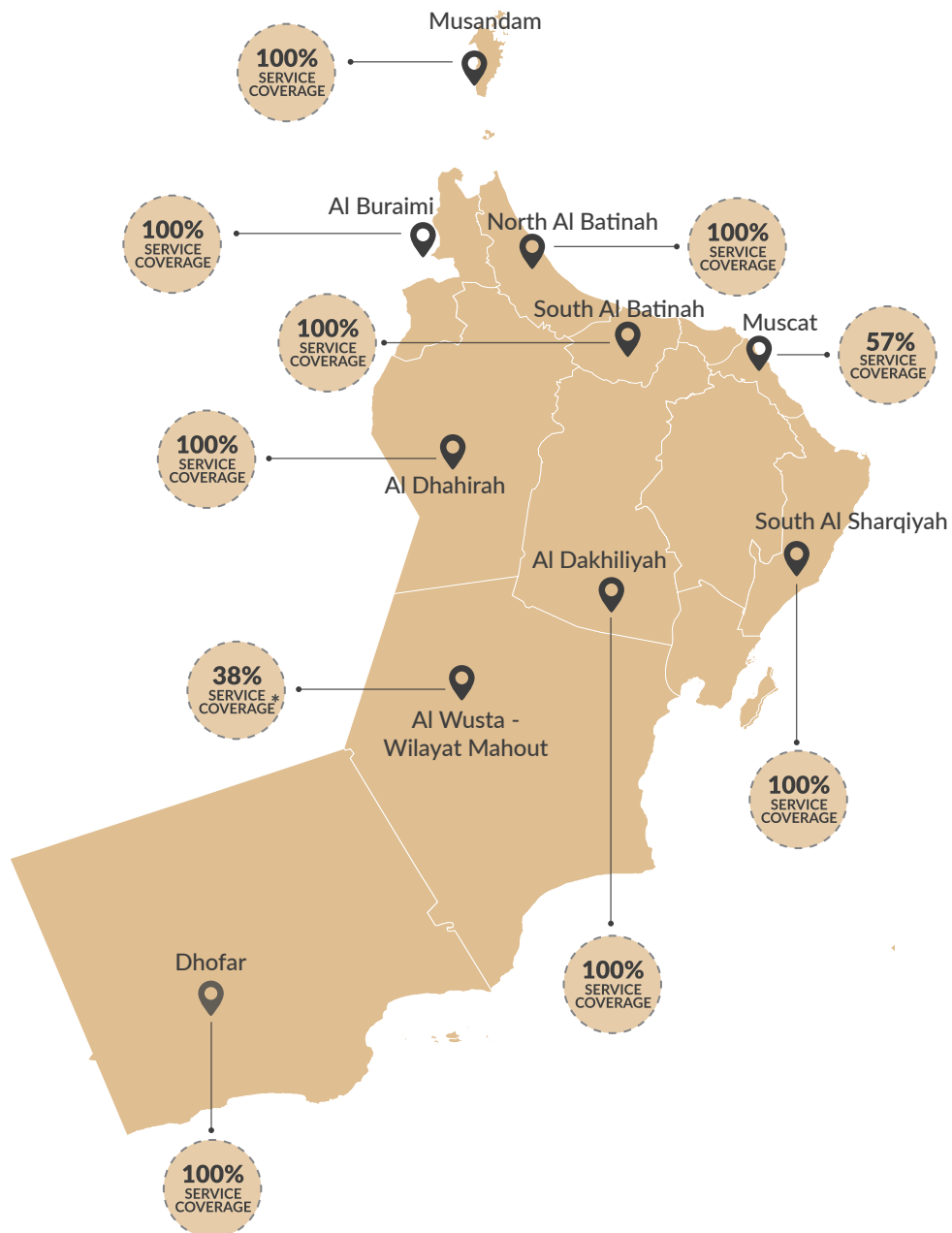
- Takeover in a phased manner only once infrastructure is ready.
- Services to be outsourced to experienced waste management companies.
- Operational contracts may or may not include Facility Management of land-fill(s) and transfer station(s).
- Contracts include per-collection, collection, treatment and filling of MSE.
- Diversion is encouraged.
- No general cleaning.



TAHWA LANDFILL, SOUTH AL SHARQIYAH

WASTE MANAGEMENT OPERATIONS

be'ah outsourced waste management operations to specialized companies which will operate in different governorates in the Sultanate of Oman. Waste management services contracts include the allocation, maintenance and sterilization of adequate numbers of bins in order to ensure clean surroundings (around a perimeter of 20 meters each). In addition to waste collection and transfer to engineered landfills, be'ah has gradually introduced its services in various governorates and increased its reach to 70.83% of the Sultanate's population by the end of 2018.



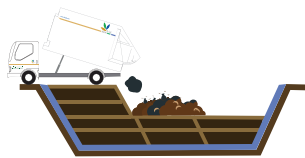
TO BE OPERATED 2019/2020:

- 1- Muscat 1 (Bawshar, Qurum, Al Amerat, Quriyat, Muttrah)
- 2- Al Wusta (Al Duqm, Hima, Al Jazir)
- 3- North Al Sharqiyah

**Part of South Al-Sharqiya service contract*

South Al Sharqiyah Governorate and Wilayat Mahout

The municipal solid waste operations in South Al Sharqiyah started in December 2015 and gradually covered all areas of the Governorate in addition to Wilayat Mahout (Al Wusta Governorate). ECOVISION Suma, the operating company for South Al Sharqiyah and Wilayat Mahout provided 9,654 bins and 90 collection trucks for waste management operations. The average daily amount of waste received from South Al Sharqiyah Governorate and Wilayat Mahout reached 281 tons in 2018.



1

Engineered landfill



4

Transfer stations



90

Collection trucks



281 Tons/Day

Average waste received



303,111 Km/Month

Average distance travelled



9,654

Bins



25

Dumpsites



4

Dumpsites closed

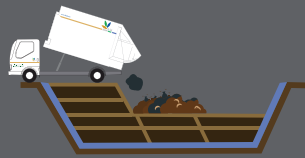


415

Total manpower

South Al Batinah Governorate

be'ah started its waste management operations in South Al Batinah in January 2016 and gradually covered all areas of the Governorate. URBASER, the operating company for South Al Batinah distributed a total number of 16,926 bins across the Governorate and deployed more than 49 collection trucks for waste operations. The average amount of waste collected in South Al Batinah in 2018 is 1,840 tons/day.*



1

Engineered landfill



1

Transfer station



49

Collection trucks



1,840 Tons/Day
Average waste received



230,593 Km/Month
Average distance travelled



16,926
Bins



94
Dumpsites



3
Dumpsites closed

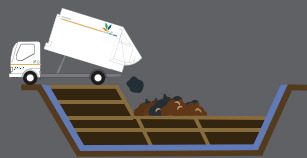


298
Total manpower

* Average daily waste received in Barka landfill including waste collected from al Seeb , Al Suwayq, and Bidbid.

Al Dakhiliyah Governorate

be'ah operations and waste management services in Al Dakhiliyah Governorate started in November 2016 through Averda, an international operator with many years of experience in the field. The operator has provided a total of 21,269 bins to serve the Governorate. An average of 357 tons of waste per day was collected in 2018 in Al Dakhiliyah.



1

Engineered landfill



6

Transfer stations



116

Collection trucks



357 Tons/Day

Average waste received



416,969.6 Km/month

Average distance travelled



21,269

Bins



43

Dumpsites



8

Dumpsites closed

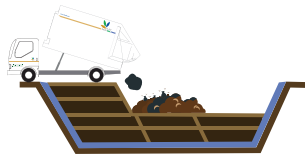


410

Total manpower

Dhofar Governorate

be'ah started its waste management operations in the Dhofar Governorate in January 2017. Averda, the appointed operator distributed 17,436 bins across the Governorate. 581 tons of waste have been collected per day in 2018.



1

Engineered landfill



2

Transfer stations



96

Collection trucks



581 Tons/Day

Average waste received



519,790 Km/month

Average distance travelled



17,436

Bins



21

Dumpsites



3

Dumpsites closed

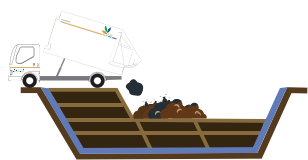


321

Total manpower

Al Dhahirah Governorate

The waste operations of both Al Dhahirah and Al Buraimi Governorates are conducted under the same contract and managed by Al Ramooz National Veolia. Operations started in February 2017 in Al Dhahirah Governorate. The operator distributed a total of 11,871 bins and collected an average of 307 tons of waste per day in 2018.



1

Engineered landfill



0

Transfer stations



79

Collection trucks



307 Tons/Day

Average waste received



391,523 Km/Month

Average distance travelled



11,871

Bins



51

Dumpsites



1

Dumpsite closed

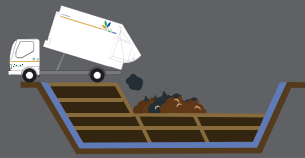


388

Total manpower

Al Buraimi Governorate

Al Ramooz Veolia started its operations in Al Buraimi Governorate in March 2017. The operator distributed a total number of 6,353 bins across the Governorate and collected an average of 487 tons of waste per day in 2018.



1

Engineered landfill



0

Transfer stations



79

Collection trucks



487 Tons/Day

Average waste received



402,104 Km/Month

Average distance travelled



6,353

Bins



24

Dumpsites



1

Dumpsite closed

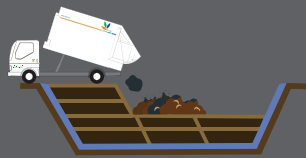


388

Total manpower

North Al Batinah and Musandam Governorates

The service takeover of waste management started in North Al Batinah in March 2017, through the appointed service provider, Imdad Al Batinah. The same operator commenced its services in Musandam Governorate in early 2018. The operator distributed a total number of 30,454 bins across both Governorates. Waste collection reached an average of 566 tons of waste per day in 2018.



1

Engineered landfill



0

Transfer stations



123

Collection trucks



566 Tons/Day
Average waste received



624,931 Km/Month
Average distance travelled



30,454
Bins



53
Dumpsites



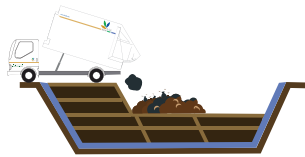
3
Dumpsites closed



375
Total manpower

Muscat Governorate (Al Seeb Early Start)

Operations including bin deployment and waste collection began in Wilayat Al-Seeb in August 2017 with LAVAJET as a service provider. By the end of 2018, the international operator distributed 26,560 bins covering 100% of Wilayat Al Seeb.



1

Engineered landfill



0

Transfer stations



49

Collection trucks



881 Tons/Day
Average waste received *



350,000 Km/Month
Average distance travelled



26,560
Bins



0

Dumpsites



0

Dumpsites closed



301

Total manpower

*Waste received at Al Multaqa landfill Bawshar, Quriyat, Mutrah, Muscat and Al Amarat.

Current Status Of Municipal Solid Waste Infrastructure Projects

Engineered Landfills



CORE INFRASTRUCTURE FOR MUNICIPAL WASTE

Traditional Dumpsites

A dumpsite is an open space of land where waste is discarded in a harmful manner. Waste is either dumped in piles, thrown in pits, buried for burning purposes or exposed to scavengers. be'ah is to curtail and eventually close open dumpsites that cause harm to the environment.



Engineered Landfills

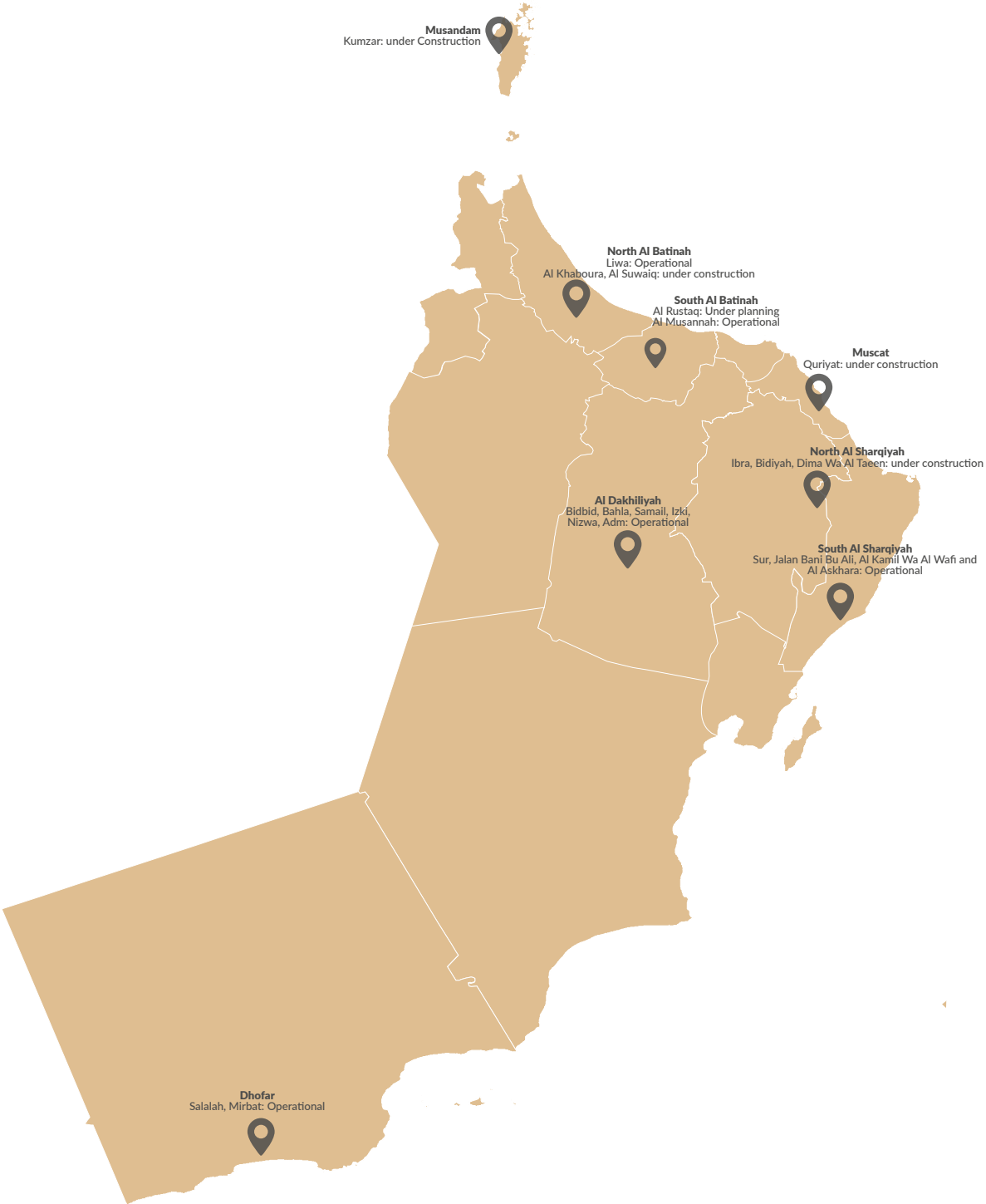
An engineered landfill is an engineered pit, where layers of solid waste are placed, compacted and covered for final disposal. It is specifically designed to lessen environmental pollution and health risks. The bottom of the pit is lined with hard-packed clay soil and/or plastic to prevent chemicals and germs from contaminating groundwater, and to avoid waste seepage. It has also a cover designed to prevent insects from breeding. Some of its features include a collection and treatment system, groundwater monitoring and gas extraction equipment.

Transfer Stations

Transfer Stations act as hubs across the country where waste is collected and sorted prior to final disposal. These centers serve as staging areas where waste can be collected and stacked before being transferred onto bigger trucks to landfills. These facilities offer waste segregation, sorting and temporary storage areas for green, bulky, and other types of waste. Transfer Stations are equipped with weighbridges, prime movers and hook lifts to ensure smooth and quick operations.



Transfer Stations





OUTLOOK

be'ah waste management services reached more than 2.5 million people in the Sultanate as it continues to work tirelessly to provide the best services to the public according to international standards.

In 2019, be'ah plans to complete the infrastructure required for further expansion in the remaining Governorates, including North Al Sharqiyah, Musandam, and Muscat. Furthermore, be'ah aims at ensuring high-level waste management operations which will achieve a minimum score of 95% based on KPIs and target-specific service providers and operators.





INDUSTRIAL WASTE

Bringing Sustainable Solutions For Industrial Waste

- Introduction to Industrial Waste
- Healthcare Waste (HCW)
- Healthcare Waste Strategy and Treatment Facilities
- Healthcare Waste (HCW) Status and Outlook
- Healthcare Waste Treatment Facilities & Service Contracts
- Industrial Hazardous Waste Strategy
- Integrated Hazardous Waste Handling and Treatment Facility
- Industrial Hazardous Waste Status and Outlook

INTRODUCTION TO INDUSTRIAL WASTE

Industrial Waste is waste that arises from industrial processes or healthcare services and is either hazardous or non-hazardous. It includes waste from oil and gas activities, manufacturing processes, or energy and water production activities. Hazardous waste is a threat to the public and the environment due to its physical, chemical or biological nature. be'ah classifies industrial waste into two categories: Healthcare Waste (HCW) and Hazardous Waste (HW).

HEALTHCARE WASTE (HCW)

HCW The term Healthcare Waste includes all the waste generated within healthcare facilities (hospitals, clinics, dental practices, blood banks, veterinary premises), research centers and laboratories related to medical procedures, including waste produced in the course of healthcare undertaken at home (e.g. home dialysis, self-administration of insulin, etc).

Due to its nature, healthcare waste causes a significant risk of infectious contamination. Around 4,500 tons of healthcare waste is generated annually in healthcare institutions across the Sultanate, the highest amount of which is produced in the Governorate of Muscat by 55% where many regional, specialist and private healthcare institutions are located. Dhofar, North Al Batinah and South Al Sharqiyah Governorates come second in this regard.

HEALTHCARE WASTE STRATEGY AND TREATMENT FACILITIES

be'ah has been providing healthcare waste management services since 2012 as part of its healthcare management strategy that was adopted after taking over from the Ministry of Health. In fact, be'ah exerted remarkable efforts to enhance the exist-

ing infrastructure by developing and increasing the operational efficiency of the HCW treatment facility in Al Amerat in Muscat. Moreover, be'ah established two other HCW treatment facilities in North Al Batinah and Dhofar Governorates covering approximately 99.9% of all HCW generated in the Sultanate. The remaining 0.1% is generated in veterinary clinics. be'ah is currently constructing a HCW treatment facility in Musandam Governorate.

be'ah provides HCW management services on a commercial basis to all governmental and private healthcare institutions across the country.

HCW Treatment Facilities and Service Contracts



**OMAN'S TOTAL
GENERATION OF HCW
4,500 TONS
PER ANNUM**



be'ah treatment facilities include incineration and autoclave technologies where incineration technique is used specifically to completely treat pharmaceutical waste, cytotoxic and genotoxic waste, highly infectious waste and waste of artificial devices. On the other hand, the autoclave device shreds and sterilizes waste to become harmless. These treatment technologies combined with disposal facilities create an integrated structure for HCW management services.

📍 Al Multqa, Al Amerat, Muscat

The HCW Treatment Facility in Al Multqa includes two treatment technologies: incineration and autoclaving. It also includes an emission monitoring system to measure gas emissions ratios in accordance with European and MECA standards. The facility has a treatment capacity of 14.5 tons of waste per day. It has approximately treated 3,000 tons of HCW in 2018 from Muscat, Al Dakhiliyah, and North and South Al Sharqiyah Governorates.

The Total Healthcare Waste Treated in 2018 in Al Multqa Facility Stood to be 3,000 Tons



88% HCW received is generated from hospitals and healthcare institutions under the Ministry of Health and other governmental entities.

12% HCW received is generated from private healthcare institution.

📍 Liwa, North Al Batinah

Liwa HCW Treatment Facility has two lines of autoclaves and a capacity to treat 6 tons of waste per day. In 2018, a total of 818 tons of HCW from North and South Al Batinah, Al Dhahirah, Al Buraimi and Musandam, was collected and treated.

The Total Healthcare Waste Treated at Liwa Healthcare Waste Treatment Facility Stood to be 818 Tons in 2018



90% HCW received is generated from hospitals and healthcare institutions under the Ministry of Health.

10% HCW received is generated from private healthcare institutions.



Thumrait, Dhofar

Thumrait HCW Treatment Facility has two lines of autoclaves and a capacity to treat 6 tons of waste per day. In 2018, the facility collected and treated approximately 552 tons of HCW generated in Dhofar and Al Wusta Governorates in 2018.

The Total Healthcare Waste Treated at Thumrait's Healthcare Waste Treatment Facility Stood to be Approximately 552 Tons in 2018.



93%

HCW received is generated from hospitals and healthcare institutions under the Ministry of Health and other governmental entities

7%

HCW received is generated from private healthcare institutions

HEALTHCARE WASTE: Status

With the existence of three operating healthcare treatment facilities, be'ah's HCW services cover 99.9% of HCW generated in the Sultanate. The year 2018 marked be'ah's key achievement with a total of 980 contracts from governmental and private entities covering a total of 1,342 healthcare institutions across the country.

HEALTHCARE WASTE: Outlook

In the coming years, be'ah's HCW plans will continue to grow to meet the demands of the HCW sector in the Sultanate. Moreover, be'ah will extend its services to include private vet clinics to ensure safe disposal of all types of HCW generated in the country.

**HCW IS TREATING
99.9% OF HEALTHCARE
WASTE GENERATED
IN OMAN**

INDUSTRIAL HAZARDOUS WASTE STRATEGY

2014 statistics indicate that nearly 1.5 million tons of hazardous waste was generated in Oman. Some of the industrial hazardous waste is either stored or exported for treatment and some of the waste may end up in open dumpsites which impose a hazard on people and the environment. However, phase 1 of be'ah's industrial waste treatment facility started receiving inorganic solid waste for treatment (landfilling) and organic solid waste to be stored for later treatment. be'ah is putting forward a sustainable solution for the treatment of industrial hazardous waste. The strategy involves establishing an Integrated Hazardous Waste Handling and Treatment Facility in North Al Batinah. Phase 2 of the facility will consist of an incineration unit, a physical and chemical treatment unit, a solidification unit, several landfills to cater to the different requirements, and pre-treatment and storage units. In parallel with the Special Economic Zone Authority of Duqm (SEZAD), be'ah has already completed building a hazardous waste landfill in Duqm as well as a storage facility. Studies are also underway to assess the requirements for Dhofar, household hazardous waste and oil fields to find a solution for the generated waste. In terms of hazardous waste collection, be'ah created an online manifest for waste generators (companies and industries) to deliver waste at the relevant facilities after being evaluated and accepted by the concerned teams in be'ah. In addition, be'ah intends to support and develop several Small and Medium Enterprises (SMEs) in the transportation of hazardous waste.

IW Facility, Duqm

In the same context, be'ah and SEZAD will be announcing the start of operation of the integrated waste management facility for both municipal and

industrial waste in 2019. The facility is designed to accept MSW i & industrial waste which includes, landfills and storage facilities.

The Integrated Hazardous Waste Handling and Treatment Facility, North Al Batinah

The Integrated Hazardous Waste Handling and Treatment Facility will operate to treat industrial waste generated in Oman such as oil and chemical waste. The projected timeline is envisaged to roll out in a phased manner. Phase one includes the establishment of general infrastructure, such as industrial waste landfills (non-lined, single-lined, double-lined), internal roads, drainage system, fencing, offices, laboratory, and weighbridges. Phase two includes the establishment of an incineration, solidification, physical and chemical treatment plants and several other treatment plants. By the end of 2018, more than 85% of phase one construction has been completed with partial operation of the landfill commencing in June 2018.

Industrial Hazardous Waste: The Current Status

The implementation of the industrial waste strategy was delayed for budget constraints; however, be'ah is closely monitoring the construction of the Integrated Hazardous Waste Handling and Treatment Facility, while paving the way for the upcoming phase.

Industrial Hazardous Waste: Outlook

To meet the demands of the increased industrial hazardous waste generated, be'ah will focus on establishing the required infrastructure in time. The operations of the industrial waste facility in Duqm are expected to commence in 2019 announcing a new milestone for the Sultanate.



WASTE DIVERSION

Transforming Waste into a Wealth of Resources

- Waste Diversion Strategy
- Material Recovery Facility (MRFs)/ Mechanical Biological Treatment (MBT)
- Reuse Center
- Construction and Demolition Waste (C&D)
- Lead Acid Batteries (LAB)
- Waste Electronic and Electrical Equipment (WEEE)
- End-of-Life Vehicles (ELV)
- Waste to Energy (W2E)
- Organic Waste Diversion

WASTE DIVERSION STRATEGY

be'ah aims to implement a long term municipal solid waste diversion strategy to achieve a diversion rate of 60% by 2020 and 80% by 2030.

The strategy will also maximize economic returns

while reducing dependency on landfill and providing opportunities for power generation industries.

Thus, a remarkable mass of waste could be sustainably and environmentally used.

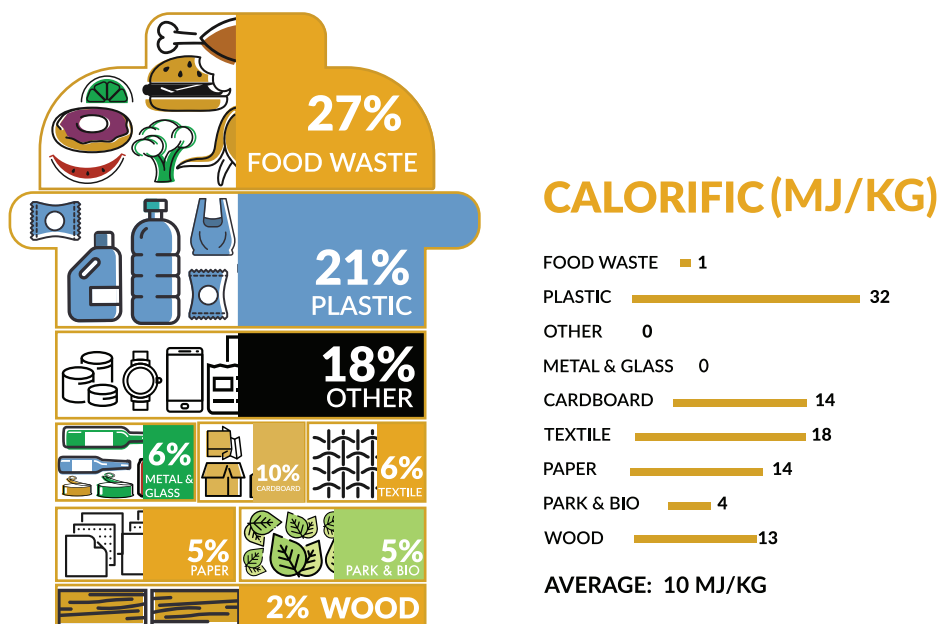
“SETTING TO DIVERT 60% OF MUNICIPAL SOLID WASTE BY 2020 AND 80% BY 2030”

In-Country Value (ICV)

Despite the fact that most recyclables are being exported, be'ah firmly recommits to supporting national economy and sustainability for achieving ICV. As a result, be'ah has been conducting a study for waste stream collection and working closely with the Public Authorities for SMEs Development (PASMAT) to create more opportunities in waste collection projects. be'ah has also engaged with the private sector to assess the possibilities of creating opportunities in waste recycling. In consequence, be'ah is strongly committed to supporting the Sultanate's in-country value mandate.

be'ah is focused on commercializing various waste streams, such as: Construction and Demolition Waste (C&D), End of Life Tyres (ELT), Lead Acid Batteries (LAB), Green waste, Waste Electrical and Electronic Equipments (WEEE) and End of Life Vehicles (ELV) by developing integrated systems. The primary objective is to develop a collection system for waste arising from source, ensuring transportation systems and identifying an attractive investment market for the private sector.

Waste Composition



The Four R's In Waste Management

The four R's (Reduce, Reuse, Recycle and Recover) is a waste management approach that aims at minimizing waste generated, managing and controlling waste streams.



Reduce

Minimization of waste at its source to Reduce the quantity required to be treated and disposed.



Reuse

Giving 'waste generated' a second life instead of disposal.



Recycle

The use of existing materials to manufacture a new product by altering its physical form and creating a brand new product.



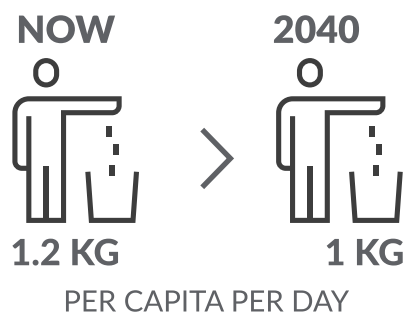
Recover

When 'waste' cannot be reused and recycled, it is usually used to recover energy.

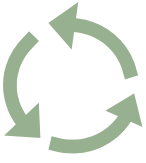


Reduce

Minimization of waste at its source to minimize the quantity required to be treated and disposed.



The strategic objective is to reduce waste to less than 1 kg per capita per day by 2040, by introducing of reduce, reuse and recycle curriculum in schools and raising environmental awareness in society.



Reuse

Giving 'waste generated' a second life instead of disposal.

REUSE CENTER

be'ah and Sultan Qaboos University (SQU) have joined hands to establish a Reuse Center at SQU premises. The purpose of the Reuse Center is to contribute towards pre-disposal waste diversion, by accepting and selling reusable items donated from Omani community including the public, schools, charity organizations, and commercial institutions.

The Reuse Center will enable SQU to promote campus sustainability and encourage active partic-

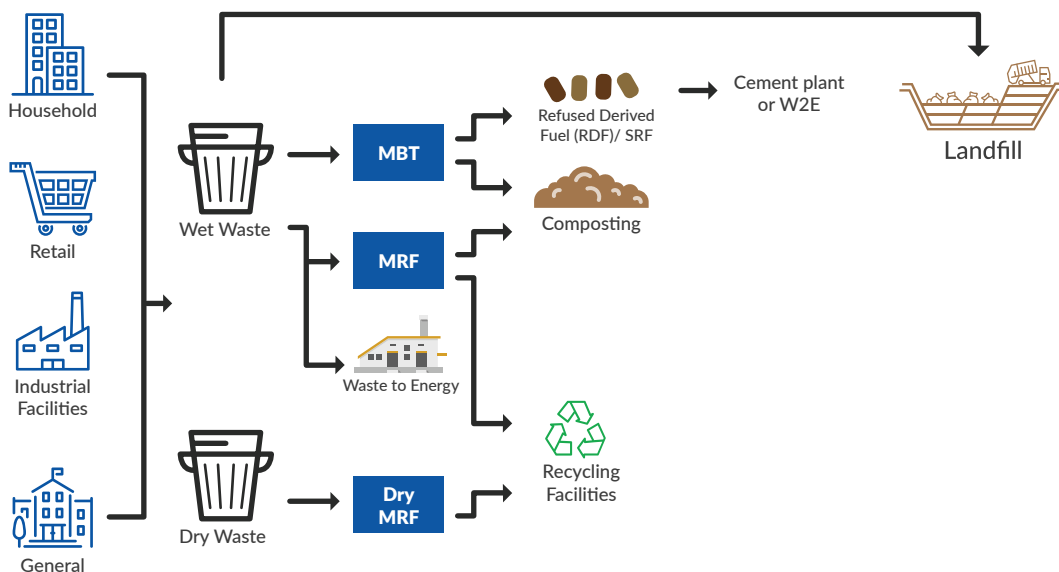
ipation of its staff, students, and surrounding communities in green initiatives by introducing waste reduction and reuse activities. The Reuse Center will also support be'ah's diversion strategy through the concept of Circular Economy which aims to keep products, components, and materials at their highest utility and value at all times. be'ah awarded a Consultant to develop a preliminary design, internal processes and governance structure for the Center in SQU.



Recycle

The use of existing materials to manufacture a new product by altering its physical form and creating a brand new product.

MATERIAL RECOVERY FACILITY (MRFS)/ MECHANICAL BIOLOGICAL TREATMENT (MBT)



Material Recovery Facility (MRF) and Mechanical Biological Treatment (MBT) plants are sorting plants that contribute to be'ah's plans in diverting municipal solid waste from landfills and reducing disposal. Such plants receive MSW generated from households and commercial establishments, and separate recyclable fractions of MSW from non-recyclables through manual and automatic sorting to recover maximum recyclables for end markets.

Good quality fuel in the form of Refuse Derived Fuel (RDF) can also be produced from MRFs to be utilized in cement kilns, coal power plants as coal supplements, and waste to energy plants.

Contrary to mixed MSW, the RDF recovered from MRF has lower moisture content, high calorific value and lower pollutants compared to the waste used in its production. Due to the organic fraction found in RDF, they are considered as a renewable energy source.

There are currently two MRFs in the process of planning and commission: one in Al- Dhahirah and one in Al- Buraimi.

be'ah has also initiated some projects to divert and recycle various waste streams generated into new materials such as Construction and Demolition Waste (C&D), End of Life Tyres (ELT), Lead Acid Batteries (LAB), Green waste, Waste Electrical and Electronic Equipments (WEEE) and End of Life Vehicles (ELV). However, challenge remains in those types of waste being collected and exported illegally causing harm to health and the environment.

CONSTRUCTION & DEMOLITION (C&D)

Recycling Waste Streams

Construction and demolition waste is typically generated from construction, renovation or demolition of buildings, roads and other structures. C&D waste is one of the most voluminous waste gener-

ated; therefore, be'ah stressed on developing plans for processing C&D waste, allocating several sites across the Sultanate for such purpose. The operations of C&D waste processing in South Al Batinah, Muscat and Dhofar has commenced. Other sites are expected to begin operations by the end of 2018.

AMOUNT OF C&D WASTE RECEIVED PER MONTH AT be'ah's FACILITIES:

- **SOUTH AL BATINAH : 2,008 TONS**
- **DHOFAR- 3,156.41 TONS**
- **AL DHAHIRAH - 5,964 TONS**
- **AL BURAIMI- 9,771.24 TONS**

End-of-Life-Tires (ELT)

ELT are tires that are no longer suitable for use on vehicles due to wear or damage. be'ah developed a management plan for ELT stream comprising of the collection and processing of ELT. A contract was awarded for the collection and processing of ELT in Al Dakhilyah Governorate to an Omani SME. Other contracts for primary processing of ELT (Cutting & Baling), storing and management of ELT in Sohar and Barka were issued. Moreover, be'ah purchased multiple shredders for primary processing of ELT to be further processed into crumbs to produce rubber products. This will promote in-country value through the involvement of SMEs and the production of raw materials that can be utilized in different industries. be'ah has also signed a MoU with Oman Cement Company (OCC) to utilize end of life tires as a fuel alternative (along with natural gas) in OCC's kilns to produce cement.

Amount Of ELT Waste Received Per Month At be'ah's Facilities:

- **SOUTH AL SHARQIYAH - 1.58 TONS**
- **SOUTH AL BATINAH - 550 TONS**
- **AL DAKHILYAH - 17.34 TONS**
- **AL DHAHIRAH - 30.79 TONS**
- **AL BURAIMI- 2.42 TONS**
- **MUSCAT 1.66 TONS**

LEAD ACID BATTERIES (LAB)

LAB contain lead and sulfuric acid and are used as a source of power. Lead Acid Batteries are mostly found in cars and the lead is considered toxic. In consequence, drawing public's attention to the importance of safe disposal has become a priority. The LAB waste processing facility in Al- Rusayl, operated by a local Omani company, started its official operations at the beginning of 2017. be'ah established a collection mechanism for LAB by registering approved collectors and connecting them to major generators of this waste stream across the Sultanate such as Orpic and PDO and signed MoUs with each of Mwaslat, Omantel, and Bank Muscat.

WASTE ELECTRONIC AND ELECTRICAL EQUIPMENT (WEEE)

WEEE is one of the fastest growing waste streams and contains diverse substances of toxic chemicals that pose significant environmental and health risks, if handled, treated and disposed of inadequately. The recycling of WEEE provides huge opportunities for the market in terms of availability of secondary raw materials.

WEEE will also be commercialized during the development stages of the stream management. be'ah has already allocated a site to receive and store WEEE and is currently collaborating with major stakeholders and different generators to ensure safe storage and disposal of this waste stream.

END OF LIFE VEHICLES (ELV)

ELV are vehicles that reached the end of their useful life, as a result, every component or material in that vehicle is waste. The development and commercialization of the End of Life Vehicles waste stream is still on its initial stages; however, be'ah finalized the study with respect to environmental impact, data collection, and data analysis.



Recover

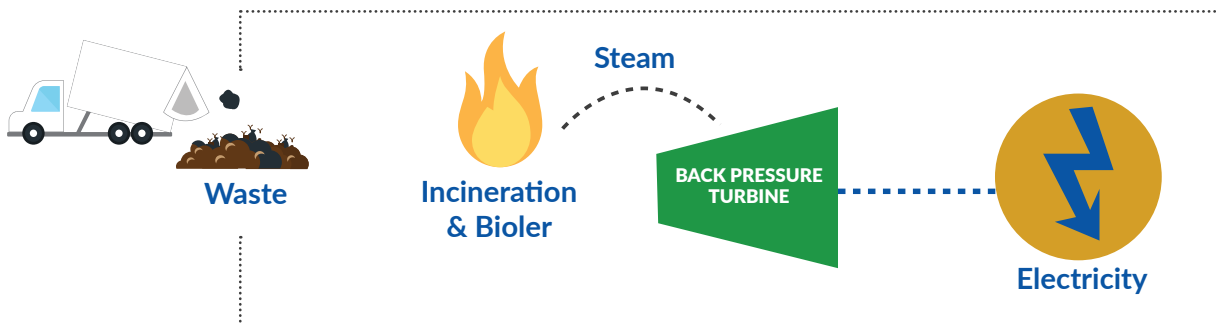
When 'waste' cannot be reused and recycled, it is usually used to recover energy.

WASTE TO ENERGY

To recover the energy from unrecyclable waste, be'ah considered various possibilities to support Oman's energy requirements. Energy from waste is a form of energy recovery where energy is generated in the form of electricity or heat as a result of waste incineration. The project proposed by be'ah aims to treat 3,800 tons of MSW per day. The treated waste will generate steam, which in return generates electricity.

By the same token, be'ah and Oman Power and Water Procurement Company (OPWP) have been

working together to conduct the necessary techno-economic studies to determine power purchase price for electricity generated from waste. be'ah and Petroleum Development Oman (PDO) have also been working jointly on a study to determine the feasibility of establishing an Energy from Waste Plant in PDO's concession area, with a daily feedstock (MSW) capacity of 1,900 tons, to generate either power or steam for Enhanced Oil Recovery (EOR) activities.

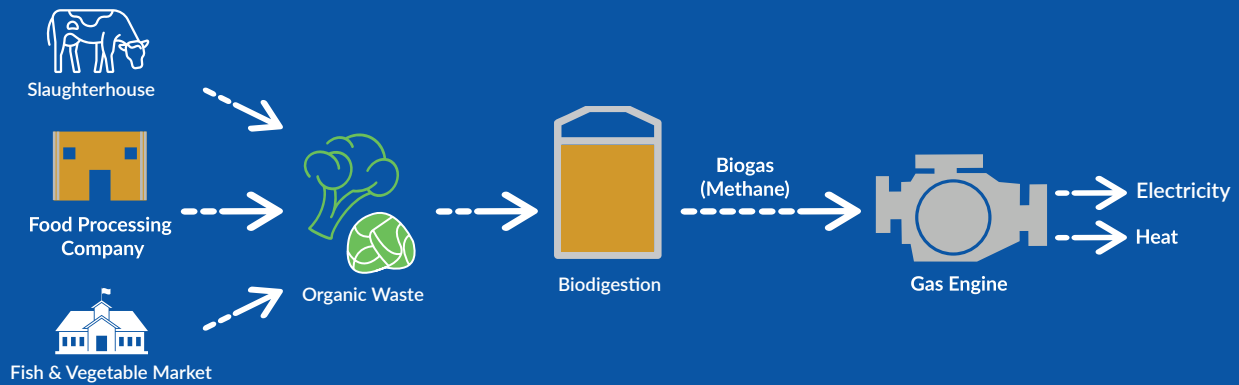


AMOUNT OF ELECTRICITY PRODUCED FROM 1 TON OF WASTE

600 KWH ELECTRICITY "NET"

'OMAN HAS SIGNED THE PARIS AGREEMENT TO REDUCE OVERALL CARBON EMISSION FROM THE COUNTRY BY 2030.'

ORGANIC WASTE DIVERSION



The organic waste diversion strategy aims at utilizing organic waste to produce biogas, a renewable energy source produced from organic waste such as agricultural (green) waste, municipal waste, sludge, or food waste. The breakdown of the organic matter in the absence of oxygen results in the generation of a mixture of different gases, which when collected can be referred to as biogas. It is, in fact, used as a fuel for various purposes including cooking. It can be also used in a gas engine to convert energy in the gas into electricity and heat. Diverting the organic waste from landfills serves two key purposes: supports be'ah to achieve its

waste diversion target and the significant decrease in CO₂ and methane emissions. Moreover, organic waste diversion is possible through various treatment technologies, such as composting, rendering and anaerobic digestion plants. be'ah signed MoUs with off-takers of biogas energy, such as The German University of Technology in Oman, Sultan Qaboos University (SQU) and Omani Association for Farmers in Al Batinah. be'ah assigned a consultant to develop a feasibility study for establishing four biogas plants at the aforementioned locations as well as in Barka landfill.







SUSTAINABILITY AND PEOPLE

Transforming Practices to Create
a Sustainable Future

- Legislations
- Quality, Health, Safety and Environment (QHSE)
- Development and Capacity Building of Omanis
- Environmental Center of Excellence (ECE)
- be'ah Academy
- Social Outreach and Community Engagement





LEGISLATIONS

It is imperative to set a legislative framework that defines the collection, transportation, recovery, and disposal of waste in order to build a sustainable integrated waste management ecosystem. These legislations and directives ensure waste is recovered or disposed without endangering human health or environment.

be'ah is collaborating with the Ministry of Environment and Climate Affairs (MECA) to review the existing laws and regulations for waste management. It is also establishing a new framework of regulations as per the government's vision for this sector.

QUALITY, HEALTH, SAFETY AND ENVIRONMENT (QHSE)

be'ah QHSE strategy involves people and practices and ensures a growth conducive environment. This strategy includes training programs on accident prevention, use of protective clothing, practicing health & safety norms, and guaranteeing a harmless workplace culture.

To maintain international standards in managing QHSE requirements, be'ah committed to implement the Integrated Management System (ISO9001, ISO14001 and OHSAS18001) across all its operations.



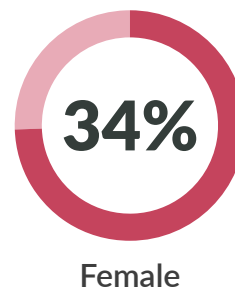
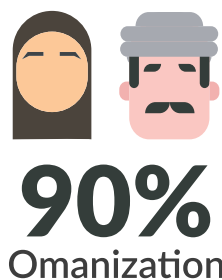
DEVELOPMENT AND CAPACITY BUILDING OF OMANIS

be'ah believes that every employee in the organization has an important role in achieving the company's vision and mission. Therefore, be'ah focuses on creating an environment that encourages both personal and professional development. Employees within be'ah are offered a unique Integrated Talent Management Program assisting them in maximizing their potential and developing them as future leaders by fulfilling their individual goals aligned with the business objectives.

Manpower December 2018

184

Number of employees



be'ah strives to provide an environment that offers opportunities to contribute to the success of the organization, encourages and rewards high performance, fosters open and honest communication between associates and the company, nurtures creativity and risk-taking, furnishes meaningful challenges, promotes individual initiative, and builds trust.

ENVIRONMENTAL CENTER OF EXCELLENCE (ECE)

The Environmental Center of Excellence project targets the local community and international businesses, as well as the affected consumers in the process of transforming waste management services in the Sultanate. The center reveals high expectations of great opportunities to integrate environmental researches and services and encourage multi-disciplinary collaboration between various academic, social and business institutions in the field of waste management. Additionally, the intellectual capacity of these various institutions will be invested in developing the waste management sector.

Creating an innovative culture for the birth of new ideas requires the establishment of a training institute that would become a hub for the right practices towards a sustainable future through a close collaboration with MECA, The Research Council of Oman, colleges and universities and other partners

sharing the same vision. The development of the Environmental Center of Excellence has indeed commenced, setting a new benchmark in the region.

The Environmental Center of Excellence intends to instigate a culture of sustainability within Oman. The center provides services in the areas of research & development, innovation, technologies, product development, training, consultancy and advisory services, and education and awareness support. The Environmental Center of Excellence has four pillars; Research and Development, Environmental Data Management, Technology Assessment and Commercialization, and be'ah Academy. It aims at transforming industry research into ideal practices, acts as a broker for information and provide governmental entities with valuable data and insights.

Goals



1. Enhance Research & Development



2. Enhance Sector Capacity



3. Build & Transfer Knowledge



4. Community Outreach to Raise Awareness

Environmental Center of Excellence (ECE) Services



Awareness



Clean Production



Research & Development



Training



Environmental Consultancy



Legislative Consultancy

Global Partnership

- be'ah signed a Memorandum of Understanding with the International Solid Waste Association (ISWA) for developing training programs and introducing best practices in waste management.
- be'ah signed a Memorandum of Understanding with UN Global Compact pact on the adoption of social responsibility and sustainable policies.
- be'ah signed a Memorandum of Understanding with the Institute of Environmental Management and Sustainability to provide training programs that promote sustainable environmental skills.

be'ah ACADEMY

In 2018, be'ah Academy was launched with the vision of building the capacity of Omanis. The Academy is focused on developing and implementing scientific, technical, and awareness programs.

DEVELOPMENT & CAPACITY BUILDING OF OMANIS

be'ah strongly believes in the importance of developing the capacity of Omanis in the field of sustainability and environment. Therefore, the academy is working on developing tailored scientific and technical courses that are meant to train and develop experts in specific fields related to environmental management.

As a first step, be'ah launched the Environmental Excellence Program that aims at building and developing different set of skills for fresh graduates in fields related to environment. The program offers training and educational opportunities in the fields of awareness activities, events, and campaigns. The program extends its training to include content and material that supports the objectives of the awareness campaigns.

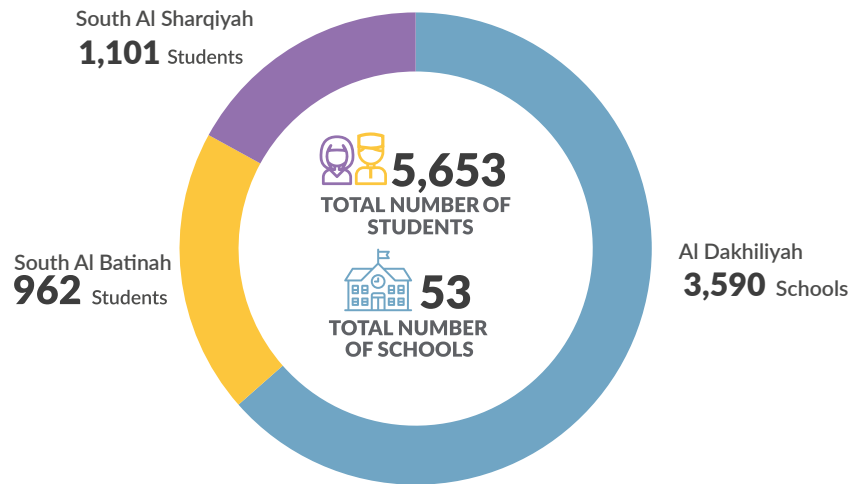
SOCIAL OUTREACH & COMMUNITY ENGAGEMENT

be'ah deeply believes in reaching out to the larger community in order to build and contribute to the creation of waste management practices that are based on collaboration between all stakeholders including the public. In addition, be'ah raises public awareness about waste management by reaching out to different communities across the Sultanate. be'ah is developing programs for behavioral change towards eco-friendly practices. These programs will institutionally provide endorsement through disseminating waste management knowledge to students in schools, colleges, universities, and more. The community outreach programs promote the current trend for saving the environment.

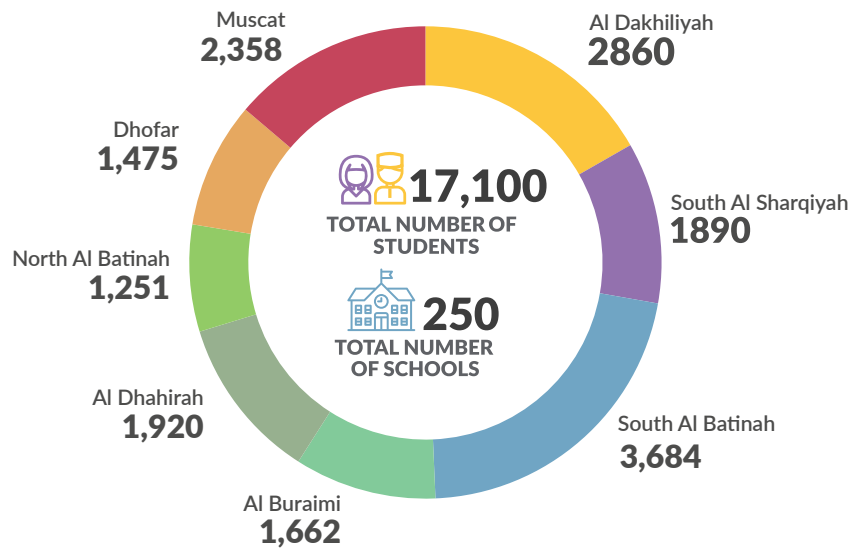
On the other hand, those programs are working closely with people to change behaviors in waste management and disposal, inspiring all generations who manifest environment care.

In 2018, be'ah community outreach programs reached 40,000 children through different activities that were conducted either in schools or in public events and more than 17,000 general audience through different on-ground activities and campaigns.

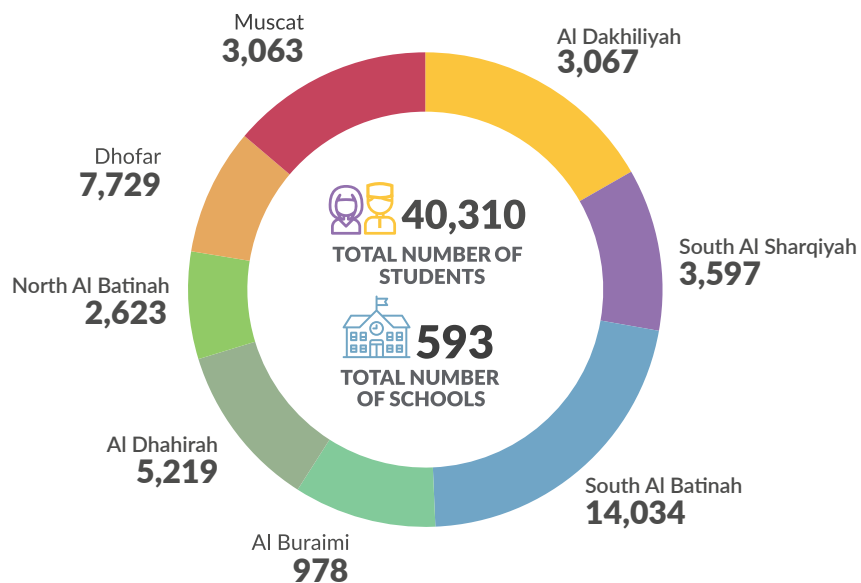
Total Number of Students and Schools Reached by 2016



Total Number of Students Reached by 2017



Total Number of Students Reached by 2018





DEFINITIONS

A Glossary of Terms and Explanations which were Referenced in the Previous Chapters.

Waste

A material which does not have sufficient value to retain.

Municipal Solid Waste (MSW)

Waste generated from domestic activities such as households, restaurants and hotels that are similar in nature and composition.

Industrial Waste

Waste generated in industrial processes, as well as the waste derived from, mining, oil & gas and water and electricity activities. In most cases it is considered to be hazardous waste.

Hazardous Waste

Waste arising from commercial, industrial, agricultural or any other activities, which due to its nature, composition, quantity or any other reason is hazardous or potentially toxic to human health, to plants or animals, to air, soil, water or any other components could cause health hazard to the public and to the working environment.

Healthcare Waste

Waste generated at health care facilities, such as hospitals, clinics, dental practices, blood banks and veterinary premises, as well as medical research facilities and laboratories. Generally, medical waste is healthcare waste that may be contaminated by blood, body fluids or other potentially infectious materials posing a significant risk of transmitting infection.

Waste Electrical and Electronic Equipment (WEEE)

Electrical and Electronic Equipment (EEE) which has reached end of life (waste), including all components, subassemblies and consumables which are part of the product at the time of discarding.

Animal Waste

Refers to livestock manure, unconsumed feed associated bedding materials, solid, semisolid and liquid slaughterhouse residues, and also any animal that has died of natural cause, disease or by accident in a public area or on a farm.

Bulky Waste

Solid waste that may require particular handling and management, by reason of its bulk, shape, or weight that cannot be placed in a container or bundled. This waste includes, but is not limited to: furniture, mattresses and appliances such as refrigerators

Commercial and Business Waste

Solid (non-hazardous) waste from premises that are used either wholly or predominantly for trade, business, sport, tourism, travelling, recreation or entertainment.

Construction and Demolition (C&D) Waste

Solid waste resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure including houses, buildings, industrial or commercial facilities, bridges, roads etc.

End of Life Tire (ELT)

Used tire that cannot or is not reused for its originally intended purpose and it is not retreated. Such tires may have further use as a raw material for other processes.

End-of-Life-Vehicles (ELV)

Motor vehicles which have reached the end of their useful lives and are considered to be significant part of waste streams to be managed properly. ELV parts and components can be recycled or processed to obtain useful materials for various industrial applications.

Lead-Acid Battery (LAB)

Type of battery that uses plates made of pure lead or lead oxide for electrodes and sulfuric acid for the electrolyte to produce electrical current.

Green Waste

Solid biodegradable waste comprise of wood and excess plant material derived from the maintenance or trimming of trees, grass, landscaped areas or areas of agricultural production, consisting of organic waste such as branches, leaves and crop residue.

