



مركز الإحصاء
STATISTICS CENTRE



Annual Environment Survey Main Results

Abu Dhabi Emirate 2017

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Introduction

The Statistics Centre – Abu Dhabi (SCAD) conducts annually a series of field surveys that help provide accurate and updated statistics on the Emirate of Abu Dhabi. The results of the Annual Environment Survey are of great importance to decision and policy makers, in addition to the business sector and researchers who require environment data for creating plans, analysis, studies and reports.

Results of the survey provides a broad database that covers environmental protection expenditure by sector, type of protection, estimation of water and energy consumed, in addition to waste management statistics within each economic activity.

The report includes the summary of the results of key environment indicators of yearly environment survey, executed this year 2018, of five specialized economic surveys for the year 2017, namely: construction, transportation and storage, services, trade and industry. Thus, the results help measure the developments in these activities and the development that took place in the environmental sector. SCAD is pleased to present this important report, which required significant field and office efforts over several months. We hope that it will meet the requirements of environmental data users at all levels.

The study shows the increment in expenses on environmental protection activities. Where, economic activities tended to increase spending on surveillance and follow-up environmental procedures in order to reduce expenditure on the environmental impact. In addition, the industrial operations conducted several practices for optimal utilization of available resources such as waste selling and recycling of a 25% of the total amount of waste with achieved income of about 95 million AED and has become a significant economic benefit, especially in industrial activity. Natural gas has increased with more than 96% from entire energy consumption of this specific sector.

Key Points

Environmental Protection Expenditure Statistics

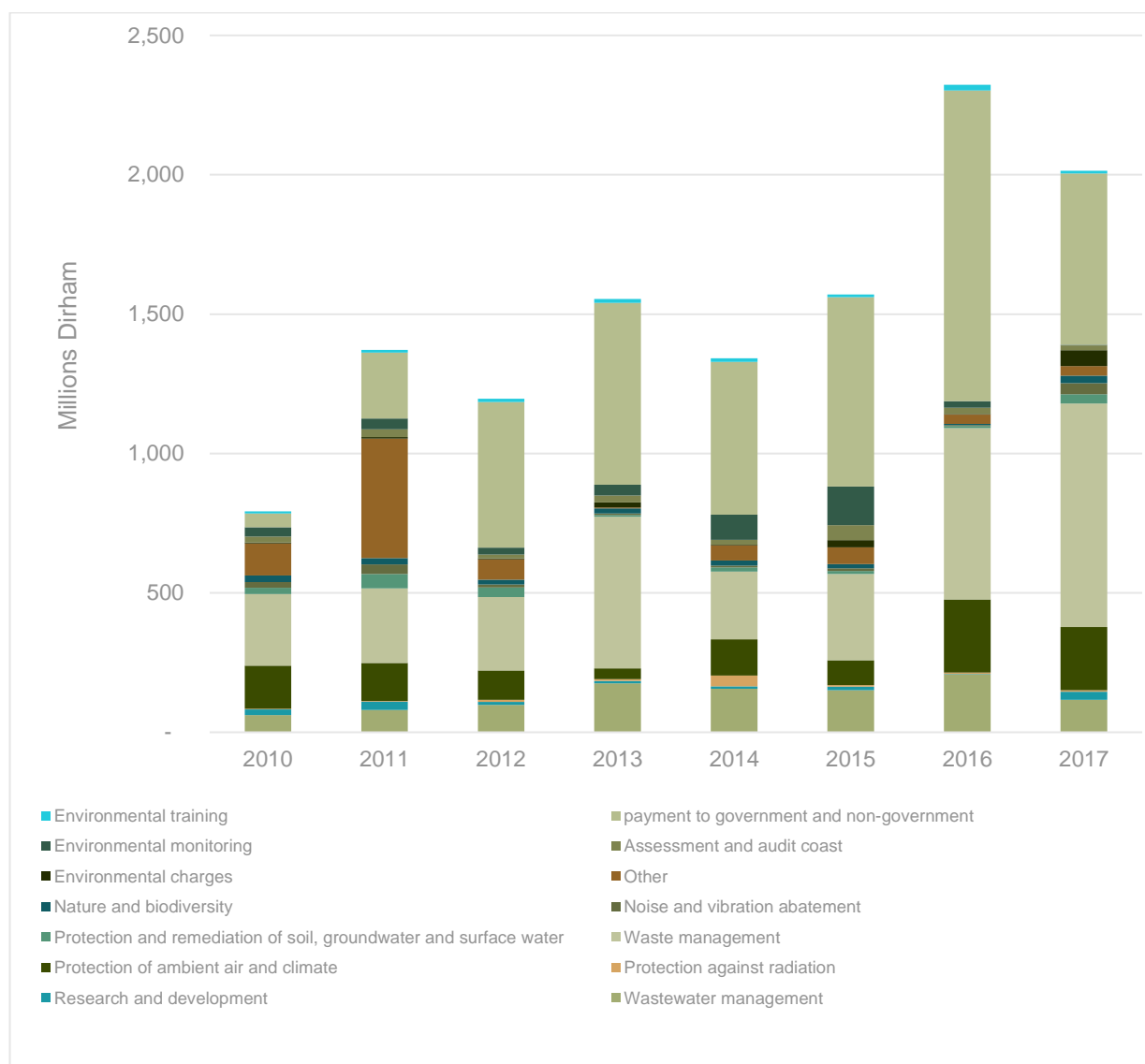
This chapter highlights the results of Annual Environmental Survey, which carried out by SCAD. The survey aims to identify the expenditures on environmental protection activities in the Emirate of Abu Dhabi, in addition to identify forms of spending and provide data and information necessary to produce statistics consistent with the National Accounts.

Environmental and economic accounting integrated system issued by the United Nations in February 2012 which includes a full set of accounts showing within the components the expenditure on environmental protection in various fields. In 2017, expenditure of economic establishments in environmental protection activities in Abu Dhabi Emirate reached 2 billion AED.

Results of the survey show the environmental challenges facing the business sector; with the expenditure of economic establishments focused on waste management. In 2017, waste management constituted 61% of total environmental protection expenditure, followed by wastewater management and protection of ambient air and climate with 17% and 9% respectively.

The cost of environmental protection decreased in the five economic activities, namely, industry, construction, services, trade, transportation and storage from 1.18 Billion AED in 2016 to approximately 700 million AED in 2017, Due to some of environment service provider practices be collecting the waste generated from sources without fees and uses it as raw material or sell it to other recycling facilities.

Figure 1.1: Environmental protection expenses by type -2017



Water and wastewater usage in the industrial sector statistics

The industrial sector consumes and uses a significant amount of water in the Emirate of Abu Dhabi: in 2017, the industrial sector consumed 12,622 Million Cubic Metres from different sources. Table 1.1 shows that general water network consumption decreased to 56 MCM. Seawater consumption rose by 6% during the same period. Seawater is mainly used for cooling purposes in process industries and power plants, 89% of the seawater used is discharged back into the sea.

Table 1.1: Amount of water and wastewater usage in industrial sector by type

Million Cubic Metre

Item	2010	2011	2012	2013	2014	2015	2016	2017
General Water Network	12	36	25	28	44	49	68	56
Sea Water	11,116	10,988	9,525	10,058	10,848	12,196	11,910	12,561
Ground Water	5	7	0	0	4	5	7	5
Total	11,133	11,031	9,550	10,086	10,896	12,250	11,985	12,622

Source: Statistics Centre– Abu Dhabi

Wastewater treatment from general water network

Table 1.2 shows the amount of treated wastewater at 13,937 thousand Cubic Metres in 2017, an increase of 22% over 2016, while the amount of reused treated wastewater rated 77% in 2017. Figure 1.2 illustrates the progress achieved in the reuse of treated wastewater by industrial establishments.

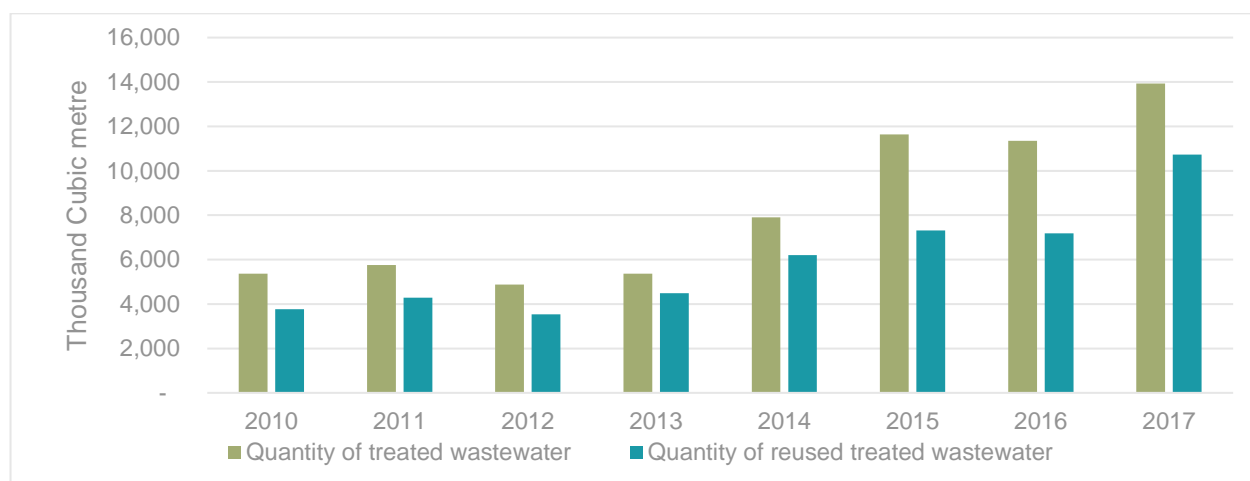
Table 1.2: Quantities of treated wastewater and reused treated wastewater in industrial sector

Thousand Cubic Metre

Item	2010	2011	2012	2013	2014	2015	2016	2017
Quantity of treated wastewater	5,362	5,762	4,883	5,374	7,910	11,636	11,354	13,937
Quantity of reused treated wastewater	3,771	4,293	3,540	4,492	6,205	7,311	7,178	10,728

Source: Statistics Centre– Abu Dhabi

Figure 1.2: Amount of wastewater treated and wastewater treated reuse in industrial sector



Source: Statistics Centre– Abu Dhabi

Energy Consumption statistics

Energy is for the driving force of all economic activities. Fossil fuels, which measured in Billion British Thermal Units (BBTU), used in the industry to produce final products.

In 2017, the total amount of energy consumed in the Emirate of Abu Dhabi in the five economic activities shown in table 1.3 totaled around 1,660 Thousand Billion British Thermal Units, as well as total amount of electrical power consumed around 138 Thousand Billion British Thermal Units. Figure 1.3 shows the percentage distribution of electrical power consumption in the main five economic activity. The industry activity accounted for the largest proportion of total electricity consumption 45%, followed by the services activity with a 30%, and the least electricity consumption goes to the transportation and storage activity with a 3% from the total amount of produced electricity consumption from all five economic activities.

Total amount of natural gas consumed were 1,443 Thousand Billion British Thermal Units, which contribute around 69% from total consumption of Natural gas in all economic activities, where industrial activity is depends mainly on natural gas by 96%; however, this consumption includes electric power production. Figure 1.4 displays percentages of fossil fuels consumption by economic activity.

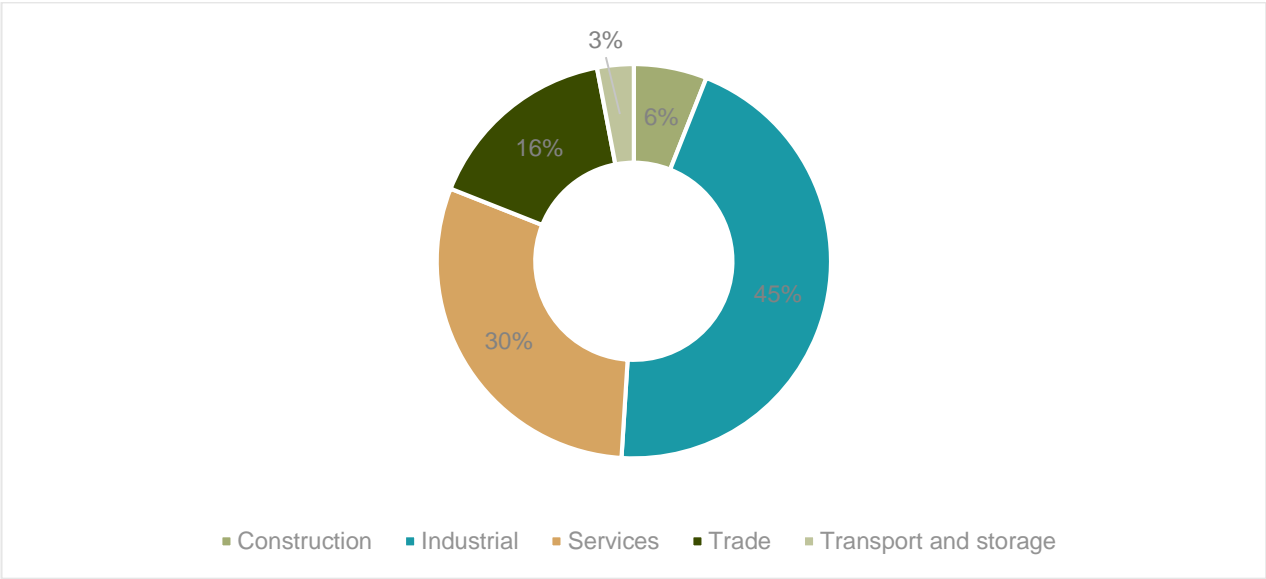
Table 1.3: Amount of Fuel consumed by type and economic activity - 2017

BBTU

Type	Total	Construction	Industrial	Services	Trade	Transport and storage
Gasoline	51,842	13,405	12,498	10,230	9,766	5,943
Diesel	69,919	23,378	22,830	6,270	3,319	14,122
Kerosene	95,837	-	225	-	-	95,612
Natural Gas	1,442,924	26	993,176	447,977	86	1,662
Grand Total	1,660,525	36,809	1,028,729	464,477	13,171	117,339

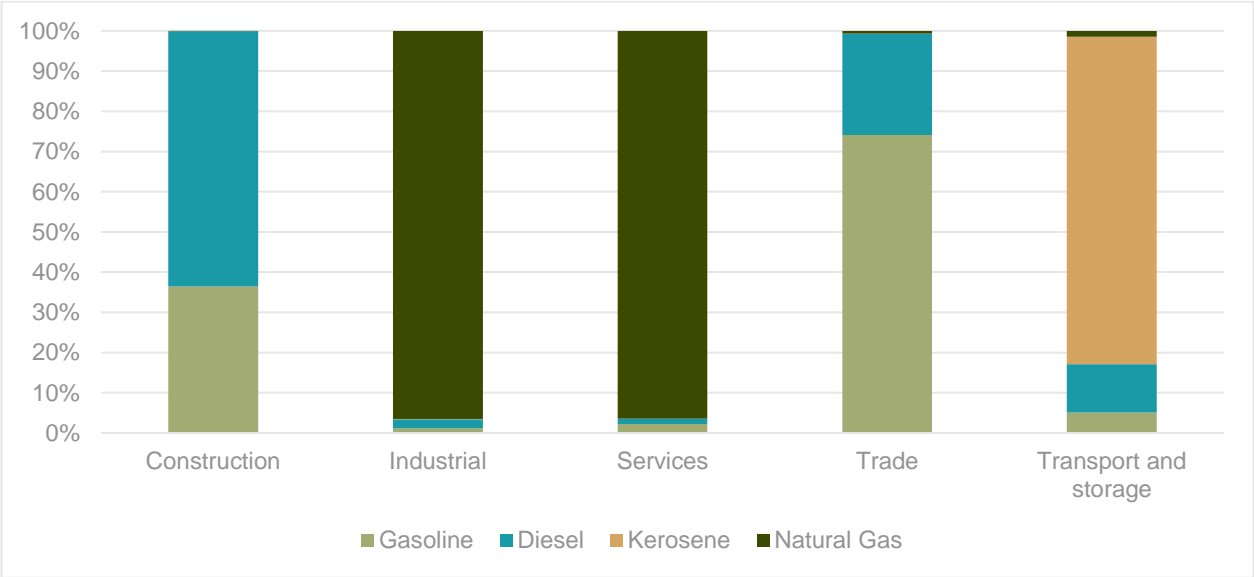
Source: Statistics Centre– Abu Dhabi

Figure 1.3: Percentage of electricity consumption by economic activity - 2017



Source: Statistics Centre– Abu Dhabi

Figure 1.4: Percentage of fuel consumed by economic activity – 2017

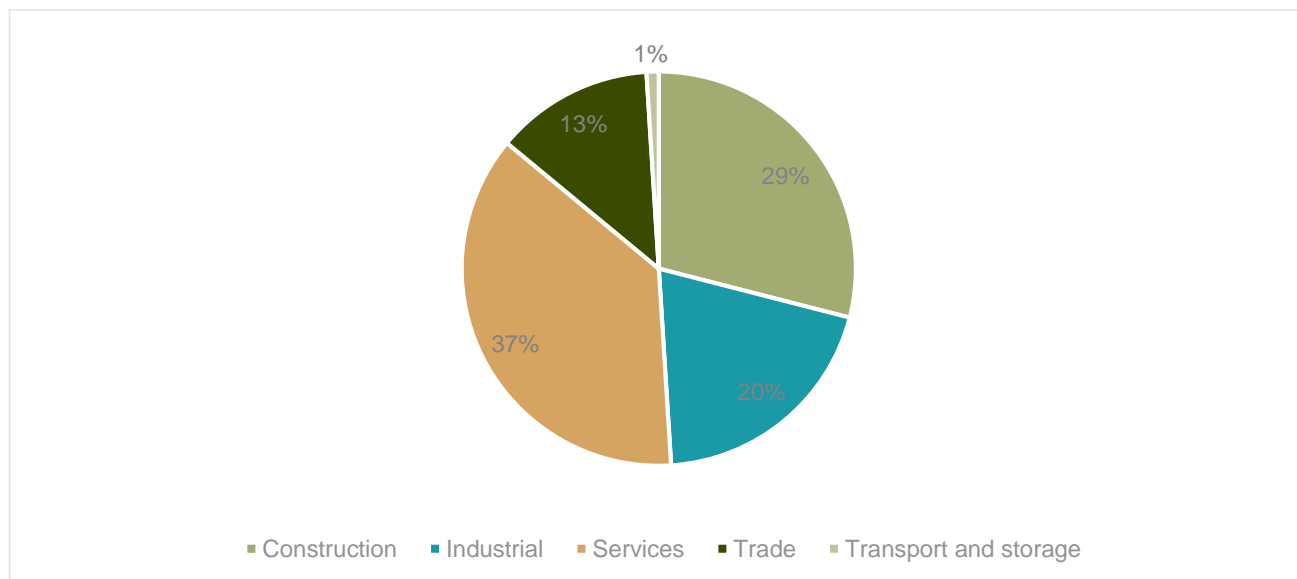


Source: Statistics Centre– Abu Dhabi

Non-hazardous solid waste statistics

Waste considered one of the challenges facing the environment and its importance in the Emirate of Abu Dhabi; therefore, waste management in economic activities was included in the environment survey. In 2017, non-hazardous solid waste quantity reaches 2,883 thousand ton. Figure 1.5 shows the percentage distribution of total non-hazardous waste produced that service sectors produced 37% of total waste generated. Transportation and storage showing the lowest waste production percentage 1%.

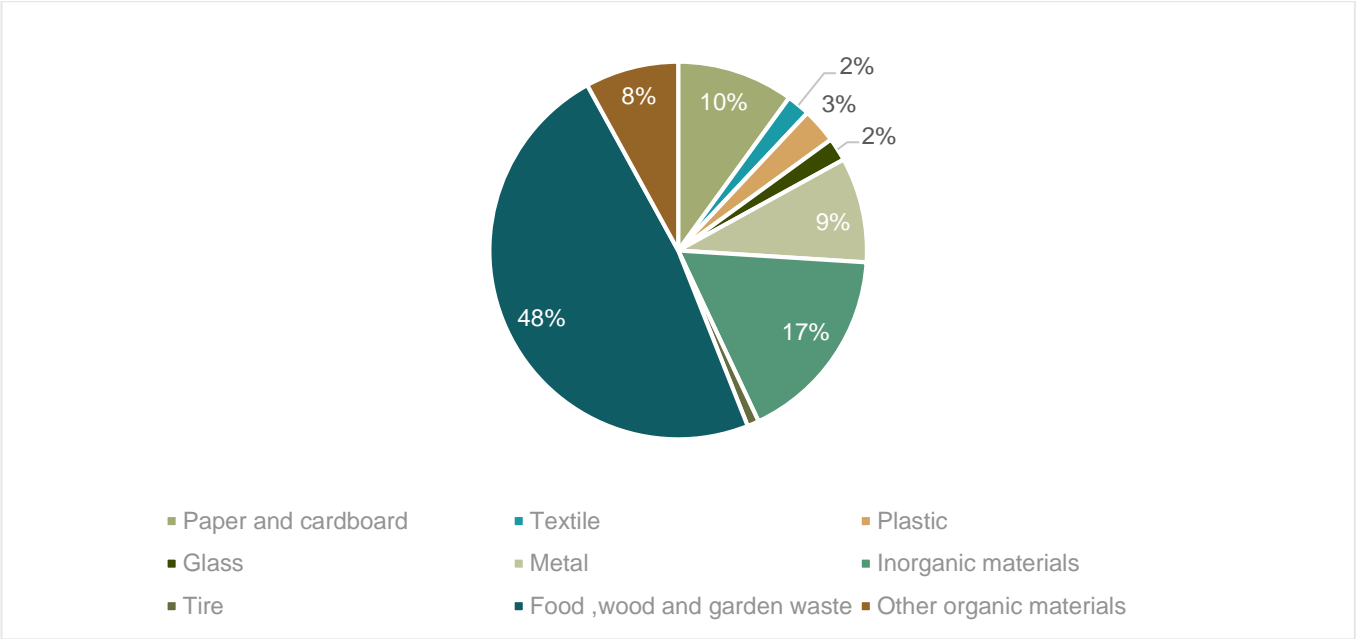
Figure 1.5: Percentage distribution of non-hazardous solid waste by economic activity – 2017



Source: Statistics Centre– Abu Dhabi

The results of the study revealed that the largest component of non-hazardous solid waste in 2017 is food and garden waste with 48% and inorganic waste compose 17%. Tires, textiles and glass waste constituted the lowest proportion of solid waste as illustrated in figure 1.6.

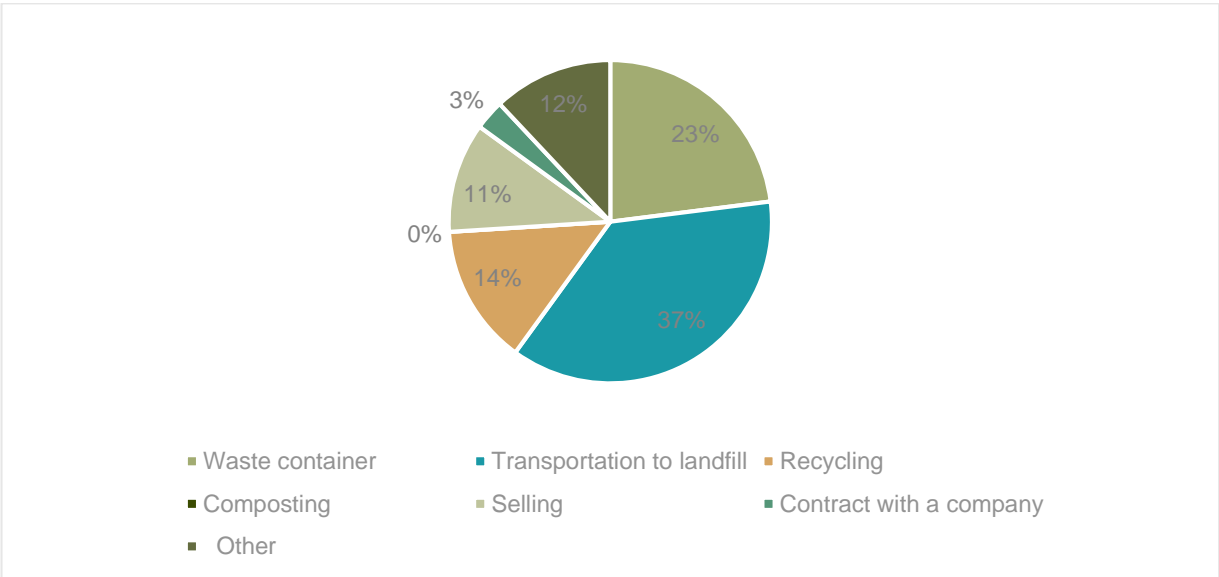
Figure 1.6: Percentage distribution of non-hazardous solid waste (organic-inorganic) solid waste by composition – 2017



Source: Statistics Centre– Abu Dhabi

Figure 1.7 shows the percentage distribution of waste by disposal method; data reveals that 37% of the total solid waste generated transferred to the landfills. Percentage of waste disposed through the contract concluded with other companies was 3%, while waste recycling noted 14%.

Figure 1.7: Percentage distribution of solid waste by disposal method – 2017



Source: Statistics Centre– Abu Dhabi

Appendix

Survey objectives

Economic surveys are of great importance; they provide a wide range of data covering various economic activities operating in the emirate of Abu Dhabi. The Statistics Centre – Abu Dhabi carried out environment surveys to collect 2017 data. The survey objectives include:

1. Provide data to support environmental policies and decision making in Abu Dhabi Emirate and measure the performance of these policies.
2. Support the projects of Abu Dhabi Government related to environment statistics such as the GHG inventory, occupational health and industrial security.
3. Provide the data required by entrepreneurs, business men and investors to take appropriate decision and evaluate their investment decisions.
4. Contribute to providing a strong base of environmental statistical data in the Emirate with regard to economic activities.
5. Provide baseline data for measuring progress in achieving the agenda of Abu Dhabi Government and Abu Dhabi's Vision 2030.
6. Contribute to building the UAE's national statistical system through the provision of the Emirate's detailed data.
7. The project will also produce some new indicators, required by a number of Government entities that not provided by the available administrative data sets.

Statistical Units and Classifications

Data collected from «Establishments» engaged in specified economic activities. Industry Classification was based on the “Two Digit Level” of the International Standard Industrial Classification of All Economic Activities (ISIC Rev.4).

The sectors covered by the survey are:

1. **Industrial activity. Includes:**
 - Mining and quarrying.
 - Manufacturing.
 - Electricity, gas, steam and air conditioning supply.
 - Water supply; sewage, waste management and remediation activities.
2. **Construction activity.**
3. **Trade activity. It includes:**
 - Wholesale and retail trade; repair of motor vehicles and motorcycles.
4. **Transportation and storage activity.**
5. **Services activity. It includes:**

- Accommodation and food services activities.
- Real estate activities.
- Professional, scientific and technical activities.
- Public administrative and support services activities.
- Education.
- Human health and social work activities
- Arts, entertainment and recreation.
- Other service activities.

Methodology

The latest international methodologies and recommendations of conducting economic statistics surveys have been followed in terms of definitions, concepts and methodology of collecting basic data. Data and indicators have been extracted from the actual results of the survey.

3.1 Sample Design and estimate results

The frame for the survey is based on the 2011 “Frame Update Project” for the Emirate of Abu Dhabi. The frame has been divided into three strata: large, medium and small based on the number of employees. A comprehensive count was applied on the large stratum, while estimation method was used for medium and small categories.

3.2 Reference Year

Data was primarily collected from establishments for the calendar year of 2017. In case of data provided by some establishments for different accounting years, data was collected from an accounting period that falls mostly in the survey year.

3.3 Survey Documents

Documents of the survey include the questionnaire, training manual for field researchers and audit rules manual.

The questionnaire was designed to collect all survey objectives. Survey objectives are:

1. Introductory and general data about the establishment.
2. Value of environmental protection expenditure.
3. Water consumption statistics.
4. Energy consumption statistics.
5. Waste management statistics.

3.3.1 Training Manual

The training manual contains terms used in the questionnaire in order to clarify them for those, who are working in the field and office audit. It also includes a detailed explanation of all questions and how to fill the data in a way that guarantee the highest degree of accuracy of the questionnaire. Likewise, the manual includes duties of personnel conducting the survey such as, supervisors, enumerators and auditors.

3.3.2 Auditing Rules Manual

The manual includes basic rules that should be followed by researchers as well as auditors while conducting their work. It also contains the basic rules of technical revision and tables' revision.

Work Stages

4.1 Preparatory Stage

This stage included identifying objectives of the survey and designing the questionnaire. Training and auditing manuals, and office and field reviewing were also prepared during this stage.

4.2 Fieldwork Stage

Fieldwork was carried out by trained researchers, who have been selected previously according to specific criteria. They were divided into teams and supervised by field supervisor.

4.3 Office Processing

Completed questionnaires were delivered to the auditing section to be fully audited. Poor quality responses were identified and fixed by subject matter experts or referred back to the establishment for correction. Finally, questionnaires were coded and sent to the Data Entry section.

4.4 Electronic Processing

Once the questionnaire is audited and encoded, data entry staff use a specially designed application to enter questionnaires. Preliminary results were extracted and audited to ensure data accuracy. Then lift coefficients are used to extract final results.

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