

**The Methodology of
Environmental Statistics 2015**

Surveys General Background

4.1 Introduction

Several surveys have been implemented during 2015 at the National level for different economic activities (the medical services, municipalities, chemical industries, finance and insurance, and software maintenance activities,..etc.) in order to collect data pertaining to 2014 on the uses of water and energy, production of hazardous and non-hazardous solid and liquid wastes, production of the e-waste and the environmental protection expenditures made by these activities, and the objectives of these Surveys are:

- A. Providing of statistical data on solid and liquid wastes (hazardous and non-hazardous).
- B. Providing of data on the quantities of used water and sewage, in addition to methods of disposal and treatment.
- C. Providing of data on quantity, type and value of consumed energy.
- D. Providing of data on the expenditures to protect the environment.
- E. Providing of information on infrastructure and capital formation, and fixed assets related to water.

4.2 Surveys Coverage

The surveys covered a representative sample on the region level for software maintenance activities and finance and insurance activities. While, the manufacturing of chemical materials activities were covered by a comprehensive survey for certain industrial activities and a representative sample of other activities. Public and private hospitals and municipalities were completely enumerated.

4.3 The Surveys Frame

The Economic Census carried out in 2011 provided a comprehensive frame for economic establishments. This frame has been used to design the environmental surveys samples.

4.4 The Surveys Sample

The stratified sampling method has been employed in the design of these surveys. The establishments were divided into strata according to the number of employees in each establishment. The sample has been distributed among the strata by using the method of proportional distribution to the number of employees in each stratum and was drawn as follows:

- A. A comprehensive survey in 2014 was used for all municipalities in the Kingdom.
- B. A comprehensive survey in 2014 was used for all public and private hospitals.

- C. A comprehensive survey in 2014 was used for Hotel and Education Activities in the kingdom, covering hotels, general secondary education, higher education and other education activities, like cultural centers. Those Activities were selected based on their impact on the environment in term of using water and energy and producing waste.
- D. Stratified sample was selected for industrial activities in 2014. The Kingdome divided into three regions accordingly, and then the sample society in each region and economic activity divided into five categories as shown below

Establishments Category	Frame Worker Category
1	Less than 5 worker
2	5-9 Workers
3	10-19 Workers
4	More than 20 Workers
5	Rare Frames

- E. For the purpose of the survey in 2014 on electronic and electrical wastes resulted from the activities of the financial and insurance sector and from hardware maintenance and software activities, a sample from two groups with a total sample size 297 establishments was used. The first group covered all financial establishments and some insurance activities. The second group covered hardware maintenance and software activities.
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4.5 Main Definitions

Pollution: Is the existence of materials and heat in an ambient (air, water, soil) whose nature, location or quantity cause undesired environmental effects.

Wastes: The by-products resulted from extracting raw materials and processing of raw materials as final intermediate products, including those resulted from consumption of final products or any other human activities to be disposed of by the producer, excluding recycled wastes or wastes used in the production site.

Medical Wastes: The remaining materials resulting from medical care in hospitals, clinics, labs, and other medical establishments. This definition excludes household medical wastes.

ISIC: The International Standard Industrial Classification of all Economic Activities (ISIC) is the international reference classification of productive economic activities. Its

main purpose is to provide a set of activity categories that can be utilized for the production of statistics according to such activities.

Industrial Wastes: The liquid and solid wastes resulting from manufacturing certain products.

Standards: The standards and norms adopted by international or national specialized institutions for quality control of products (water, food ...etc) to ensure its appropriateness for use.

E-Waste or Waste Electrical and Electronic Equipment (WEEE): is the term used to describe old, end-of-life or discarded appliances using electricity. It includes computers, consumer electronics, mobile phones, fridges etc. which have been sold, donated or disposed of by their original users.

Total Suspended Particles: The solid and liquid particles suspended in the air, with a diameter of less than 100 micron. Sources of these pollutants are dust, burn of fuels, forest fires, aroused dust on non-paved roads, etc.

Pesticides: Any substance or mixed of substances used to protect or eradicate any pest including disease carriers for humans, animals, and undesirable plants or animal.

Fertilizers: Any organic or inorganic substances that contain chemical elements to enhance plant growth and soil fertility. The basic three elements are nitrogen, phosphorous, and potassium.

5 Surveys Main Documents

5.1 Surveys Questionnaires

- A. The medical services questionnaire.
- B. The industrial questionnaire.
- C. The municipality's questionnaire.
- D. Hotel and Educational Activities questionnaire.
- E. Electronic waste questionnaire.

5.2 Instructions Manuals:

- A. Instructions Manual for completing the questionnaire and explaining the concepts and terms.
- B. Editing rules manual for checking the consistency of data.
- C. The coding manual.

6. Data Collection Stage

The field work was carried out by selected interviewers under the control of the team supervisors. The field supervisors checked their questionnaires of his teams at the end of

each working day, and then handed them over to the field editors to check them again. Any questionnaire believed to have a mistake was returned to the field to be corrected.

7. Data Processing Stage

7.1 Office Processing

The completed questionnaires were checked according to written editing rules. Questionnaires containing any suspected data were returned to the field teams for verification, and upon completion of the editing operation, questionnaires were coded according to the adopted coding manuals.

7.2 Electronic Processing

The completed questionnaires were delivered to the Data Entry Division, to be entered using special pre-prepared entry programs and electronic edit rules. Upon completion of data entry and data cleaning, preliminary results were extracted to be edited and verified.

8. Preparation of Report and Dissemination of Results

After the editing and tabulation operations were completed, the Environment publication tables were prepared, and the results were uploaded on the DoS website.