

# Solid Waste Management Work Policy in Major Municipalities in the Southern Palestinian Governorates

Mohammed J. Mkheirez<sup>1</sup>, Muhammad K. Hamdan<sup>2</sup>, Mazen J. Al Shobaki<sup>3</sup>, Samy S. Abu-Naser<sup>4</sup>, Suliman A. El Talla<sup>5</sup>

<sup>1,2</sup>Al-Azhar University, Gaza, Palestine.

<sup>3</sup>Faculty of Administrative and Financial Sciences, Israa University – Gaza, Palestine.

<sup>5</sup>Department of Information Technology, Al-Azhar University, Gaza, Palestine.

<sup>6</sup>College of Intermediate Studies – Al-Azhar University – Gaza, Palestine.

<sup>1</sup>mkheirez@gmail.com, <sup>2</sup>m.kh.hamdan92@gmail.com, <sup>3</sup>mazen.alshobaki@gmail.com, <sup>4</sup>abunaser@alazhar.edu.ps,

<sup>5</sup>Eltallasuliman@gmail.com

**Abstract:** *The study aimed to identify the policy of solid waste management work in the major municipalities in the southern Palestinian governorates. The study targeted five major municipalities out of 25 municipalities distributed over the governorates of Gaza Strip, due to their greater geographical and population influence than the rest of the other municipalities represented in the municipality of Rafah, Khan Yunis, Deir al-Balah, Gaza, Jabalia al-Nazla. In order to achieve the objectives of the study, the researchers used the descriptive analytical approach that attempts to describe the phenomenon under study. The Legal Department and the Health and Environment Department, numbering 106 employees, work in those departments. 70 questionnaires were returned with a recovery rate of approximately 66%. The level of application of solid waste management policy factors in the major municipalities in Gaza Strip was moderate. The study recommended paying attention to the private sector and involving it in the solid waste management system by providing government facilities and funded feasibility studies to encourage the private sector to invest in the solid waste sector, creating strong control and information systems that help in managing the solid waste file effectively, providing community awareness programs that contribute to actively involve the community in solid waste management.*

**Keywords:** Solid Waste, Municipalities, Southern Palestinian Governorates, Gaza Strip, Palestine.

## Introduction

The increase in the population, the high standard of living, industrial and agricultural progress, and the failure to follow appropriate methods for collecting, transporting and treating solid waste have led to an enormous increase in the amount of waste and thus pollution of the environment elements such as land, water and air and the depletion of natural resources in many regions of the world. Today, solid waste management has become in all parts of the world. Countries of the world are vital to maintaining public health and safety.

As a result of the increase in the population, the agricultural and industrial development, the improvement of the standard of living of human beings and the development of means of transportation and communications, in addition to a change in the lifestyle and consumption, and the failure to follow appropriate methods in the management of solid waste, all of this was accompanied by the accumulation of millions of tons of waste and garbage in cities and villages, which caused it distorted the beauty of nature and disturbed the ecological balance (Al-Shawara, 2006).

The management of solid waste management in Gaza Strip faces a number of environmental, health, social and economic problems that have been monitored. Studies have shown that the waste is expected to reach (3700 tons / day) in (2040), in addition to the urgent need to create integrated strategic plans for solid waste management. It copes with the increasing amounts of solid waste in Gaza Strip in order to reduce its environmental and health impacts on citizens (Global Engineering and Consulting Group, 2012, P: 2).

## Problem Statement

Gaza Strip is considered one of the areas that suffers the most from the problem of solid waste management, due to the absence of a complete system of information documentation, analysis and limited oversight, which may be considered a major challenge for the future of this field. Attempts to reduce, treat and recycle solid waste did not go beyond the scope of personal and individual initiatives and rely heavily on External financing to cover the investment costs in this field, and the absence of the regulatory and political framework, which had an impact on the economic, social and environmental aspects, and on the public health of citizens in addition to the civilized appearance of the built environment in Gaza Strip (The National Strategy for Solid Waste Management in Palestine, 2010 , P: 2).

It can be said that this file has not been given enough attention besides the lack of sufficient attention to the social, economic, environmental, legislative technical dimensions related to the sector, in addition to the absence of policies and estimates of the real cost of that, which is clearly going to lead to high costs if the situation continues as it is currently The Palestinian government should consider this sector as one of the sectors of national priority. As there is an increase in the tons of solid waste generated annually by individuals and different sectors such as the economic sectors, the local sector and the health care sector operating in Gaza Strip, which need specific strategies to deal with these quantities.

### Research Questions

The study is expected to answer the following main question:

**What is the reality of work policies for solid waste management in the major municipalities in the southern Palestinian governorates?**

### Research Objectives

This study aims to achieve the following objectives:

1. To identify the extent of the development of the legal and regulatory framework to support the integrated management of solid waste in the major municipalities in the southern Palestinian governorates.
2. Identifying the strength, capabilities and expertise of institutions working in the field of solid waste management in the major municipalities in the southern Palestinian governorates.
3. The extent to which the sustainability and financial efficiency of solid waste management services and activities have been achieved in the major municipalities in the southern Palestinian governorates.
4. Verifying the effectiveness of mechanisms and foundations in dealing with hazardous, medical and private waste in major municipalities in the southern Palestinian governorates.
5. The extent of effectiveness and involvement of the private sector in solid waste management operations in the major municipalities in the southern Palestinian governorates.
6. The effectiveness of information and control systems and their role in solid waste management processes in major municipalities in the southern Palestinian governorates.
7. To identify the extent of people's awareness and participation in issues related to solid waste management from the viewpoint of workers in the major municipalities in Gaza Strip.
8. Identifying environmental safety mechanisms for solid waste services and their effectiveness in the major municipalities in the southern Palestinian governorates.

### Research Importance

The importance of the study is shown by the benefit that will be given to:

#### Scientific (Theoretical) Importance:

The importance of the research lies in the scarcity of special research on solid waste management policies in Gaza Strip and their effectiveness, as most of these studies focused on evaluating the mechanisms of solid waste management work while neglecting other aspects such as evaluating the cadres working in the field, the size of the private sector's participation in the waste management system. In addition to assessing the sustainability and financial efficiency of solid waste management.

#### Practical (Applied) Importance:

As there are a number of factors that Gaza Strip is witnessing, such as the increase in population numbers and urban expansion, which in turn contributed directly to the increase in the quantities of waste produced. Through research, researchers are trying to come up with a set of results and recommendations that may contribute effectively to developing new and effective strategies to deal with future challenges facing this sector. In addition to studying the most important factors affecting the implementation of the solid waste management strategy in Gaza Strip.

### Research hypothesis

**H<sub>0</sub>1:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the impact of solid waste management policy factors on the implementation of the national strategy due to personal data (the municipality, the competent department).

#### The following sub-hypotheses are derived from this main hypothesis:

**H<sub>0</sub>1.1:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the reality of solid waste management work policies attributable to the municipality.

**H<sub>0</sub>1.2:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the reality of solid waste management work policies that are attributed to the competent department.

### Previous Studies

- Study of (Haidara, 2016), which aimed to analyze the status of urban solid waste management in Algeria in general, and analyze the effectiveness of legal texts aimed at facilitating work on solid waste management in urban areas. The study was divided into two chapters: Chapter One "Urban solid waste and its impact on Environment, "Chapter Two" Legal Mechanisms to Facilitate Solid Waste Management in Algeria, where researchers tried to link the most important statistics of the solid waste management sector with the Algerian legislation on that sector. The most important results led to the lack of sufficient legislation to achieve optimal solid waste management, not allowing the private sector to invest in this area, and the government's control over waste treatment methods that do not meet the standards required to achieve sound waste management.
- Study of (Shaheen et al., 2014) which aimed to know the degree of environmental awareness about solid waste management in the Syrian governorate of Lattakia. Where the research used the descriptive and analytical method as a basis for this research. The researchers used questionnaires to collect and analyze data by the spss program, where the research was applied to (280)

people as a study sample from the population of Lattakia Governorate. The study led to important results: the presence of environmental awareness about the danger of solid waste to our lives, and the interest and spread of environmental awareness among the sample taken from cities is more widespread than the sample taken from the countryside. It was noticed through the study that the level of awareness of the educated groups increased more than others.

- Study of (Li Nie, 2014) that aimed to assess the current situation of medical waste management in, especially in the Xinxiang region, where researchers used semi-structured interviews for medical institutions and medical waste disposal centers, where the study identified the main factors that are applied in medical waste management and then contribute to develop an integrated system for waste management. Where the study area in Xinxiang Province consisted of (247) hospitals and health centers and (12) hospitals specialized in maternal and child care (13) institutions for the prevention of epidemics, and the percentage of government supervision on those centers was about (85%). To collect more information about the study population, the researchers collected data from government websites, published and unpublished documents, in addition to conducting meetings with (20) administrative and administrative employees, (20) doctors and nurses. In addition, meetings were held with (30) workers in hospital departments for waste disposal. The study concluded that the awareness of workers in the medical field in the regulations and laws related to this sector reached (78%), and that there are problems regarding the separation of medical waste, where the problem lies after transporting the separated medical waste to the main landfills in the governorate, treating it and compressing it without taking into account Separation operations of medical waste, in this case, the separation operations used in hospitals become useless.
- Study of (Al-Agha, 2013), which aimed to identify the reality of solid waste management in Khan Yunis governorate, where the sample of the study community consisted of (432) families, or (1%) of the families of Khan Yunis governorate. The researcher used the analytical and descriptive approach to know the quality of household waste in the governorate, in addition to using SPSS and GIS programs used to locate containers. One of the most important findings of the researcher was that the percentage of children who work on waste removal was (26.2%), and one of the most important of these problems is that the majority of children put waste next to the containers and not inside them, and the poor coordination of waste management in Khan Yunis governorate with residents taking out waste within hours. The specified percentage is (22.7%), as these wastes remain accumulated in front of homes and on the roads. The study revealed that (54.4%) of the population are not satisfied with the solid waste management service (collection and deportation). The study also showed that there is a significant shortage in the number of containers. Each container serves about (435) people in the governorate, as each container is supposed to serve (200) people.
- Study of (Sabri, 2013), which aimed to present and explore issues related to solid waste collection and management from local governments represented by municipalities, by studying the existing situation in the municipalities and analyzing aspects related to revenues and costs related to that service. The following research tools were used: Financial analysis of municipal solid waste management: to identify the costs of solid waste management in seven major Palestinian municipalities during the past three years, in addition to analyzing cost items to determine the most costly item in municipal solid waste management. Make a special questionnaire: comprehensive of most of the relevant technical and economic issues, as well as the proposed policies and procedures for municipal waste collection and management activities. These questionnaires were distributed to 30 major and central municipalities by e-mail by the Palestinian Federation of Local Authorities. The sample included municipalities classified as A, B and C, and the number of local government units amounted to (121) municipalities and (355) village councils, in addition to the participation of (100) citizens of the selected municipalities in a second questionnaire aimed at obtaining citizens' perceptions of waste collection activity. The most important results led to losses resulting from the operation of basic waste collection and removal activities, which amounted to (30%) of the total municipal budget. Most municipal officials believe that joint specialized councils should be established to manage solid waste, and the low efficiency of service fee collection. With regard to the second questionnaire, the majority prefer that the municipalities manage issues related to solid waste management, and the majority of respondents did not agree to transfer the solid waste management file to the private sector.
- Study of (Al-Karout and Al-Tuwaijri, 2012), which aimed to identify the impact of health education on the knowledge, attitudes and behavior of a group of society on issues related to solid waste treatment in the Ghobeiry area in Beirut, through lectures, discussions and events that took place on the community sample. The study was conducted on a sample of (320) people out of (1500) families living in the Ghobeiry area. Where the researchers distributed questionnaires before and after educational lectures. The most important results were a statistically significant improvement in the problems and diseases that may result from the accumulation of solid waste and an improvement in attitudes and practices related to solid waste collection and recycling. In addition, this is reflected on the sample's behavior in dealing with household waste, in addition to the sample's contribution and participation in the municipality's hygiene campaigns and activities within the volunteer work.
- Study of (ferdowsi & others, 2012), which aimed to evaluate the current situation in the waste management of hospitals in the Iranian city of Isfahan, which consists of ten hospitals. The importance of the study lies in finding weaknesses in special operations in hospital waste management, which are mostly classified as dangerous and infectious. Questionnaires were used to collect data about waste transportation, separation and treatment, and at the same time standard tests were used, which include TST and spore tests, which are used to know the effectiveness of sterilizers. The quantity of waste and its components in those hospitals was also measured manually. The most important results showed that the proportion of infectious waste in hospitals

- reached (40%), which is higher than the permissible limit (20%) according to the standards of the World Health Organization. The TST test for measuring time, steam and temperatures in sterilizers was negative in all sterilizer samples in hospitals. As for waste management, there are no special departments in those hospitals for waste treatment, as these hospitals are satisfied with separating infectious and non-infectious waste, and the municipality transfers those wastes to Burials every two days.
- Study of (Taher and Hassan, 2012), which aimed to evaluate the laws on environmental protection from solid waste pollution, and to collect information, the researchers conducted personal interviews with the Environment Department at the Ministry of Tourism and Environment, in addition to interviews with the General Department of Legal Affairs and the Red Sea State Cleanliness Authority. With the review of the legal content of environmental protection No. 11 of (2006) for the Red Sea State and the Environmental Health Law for the year (2001 AD) for the Red Sea State, the results indicated that the absence of a specific body responsible for managing the state's waste with the absence of laws governing public health in the state, which led to Neglecting the special activities of waste collection and cleaning, which are concentrated only within the city, and neglect the coastal area of the state.
  - Study of (Soufan, 2012), which aims to assess the legal, financial and institutional situation related to solid waste management in the West Bank, and describe the most important obstacles and issues that are considered a major obstacle and barrier in solid waste management in the West Bank. The study population consisted of all the municipalities operating in the West Bank, where the researchers targeted (10) of the municipalities scattered in the West Bank. The researchers relied on data collection, mainly on questionnaires and interviews with employees working in local authorities in the field of waste management. One of the most important findings of the researchers is that the environmental impacts related to solid waste management are not taken into account, in addition to an inappropriate approach to waste disposal, and the waste management sector in the local councils suffers from major financial problems, which are reflected in the service provided.
  - Study of (Bani Shamsa, 2012), which aimed to assess the reality of medical and hazardous waste in medical laboratories in the governorates of Nablus, Ramallah and Al-Bireh, where the study population consisted of (137) laboratories distributed throughout the three governorates targeted in the research, and the study sample contained (100) Laboratory, and to collect data, researchers used questionnaires and interviews with individuals working in each laboratory of the sample members to ensure the integrity of the information given. The results showed that (85%) of laboratories produce quantities of these substances that are very dangerous to society and the environment, and that (59%) Of these laboratories dispose of waste by placing them in public containers or public dumps, and that (50%) of laboratories do not perform the proper separation of waste according to the laws established by the World Health Organization. The study showed that (64%) of the workers in transporting medical waste do not deal with such waste professionally, neglecting occupational safety due to their inexperience in dealing with it.
  - Study of (Hamdan, 2012) which aimed to know the opinions, behaviors and habits of the residents of Gaza City and Beach Camp about solid waste management, in addition to knowing their role in that process of storing waste and placing it outside the house or container. The researchers used questionnaires as a tool for data collection, which were distributed to (573) houses, ie (1%) of the study population. Where the most important results showed that (45%) of the city's population receives waste removal service directly from the solid waste management, as the process takes place without the regularity of waste collection dates and the difference in collection rates and methods, while highlighting some negative behaviors by the residents from placing waste around the container or Burning or throwing in empty lands, and rampant child labor in the relaying of waste to containers. Where the researchers recommended increasing the monitoring of cleaners, increasing awareness and environmental education among the population, activating the role of NGOs and privatizing solid waste management systems.
  - Study of (Madani, 2009), which aimed to make an adequate and comprehensive analysis of the stages of solid waste management according to the Palestinian legal system. Solid waste management, starting with the general planning process and ending with provisions for licensing, approvals for licenses, provisions for occupational safety, and follow-up of complaints files. The study showed a weakness in the laws and legislations related to solid waste management.

#### **Commenting On Previous Studies:**

Several studies directly related to the subject of the current study were reviewed, where it was noted the diversity of their objectives, questions and results, which may be useful in building the appropriate tool for the current research and increasing deep understanding about the topic of research. The researchers believe that what distinguishes the current study from previous studies is the difference in the spatial and temporal limits of the study in addition to the study population and sample.

#### **Theoretical Framework**

##### **National Solid Waste Management Strategy 2010-2014:**

The strategy is defined as "the process of setting goals that are intended to be reached during a certain period of time and then mobilizing the necessary capabilities to achieve those goals according to methods that shorten costs and maximize results" (Al-Karkhi, 2014, P: 17), and through the definition it becomes clear to us the importance of strategic planning. To face the difficult external and internal environmental conditions that surround the solid waste management system in Palestine, and its negative effects on water sources in particular, and on the environment in general, and the consequent serious damage to the public health of the Palestinian citizen, as well as the enormous economic and social cost incurred by it. Our Palestinian society, as a result of the solid waste file not being managed properly. Therefore, on 28/4/2008, the Council of Ministers adopted Resolution No.

(29/53/12/M.W/S.F.) for the year 2008, which provides for the formation of the Steering Committee for the National Strategy for Solid Waste Management . Where that committee initiated the work and achieved the widest participation not only of the partner national institutions, but the sponsoring, operating or interested in this sector, led by the German Technical Cooperation GTZ and the joint councils of the municipality, civil society institutions and universities, as well as considering and benefiting from international and regional experiences and it can be mentioned here The Steering Committee formed the technical team that continued the preparation for this strategy, as well as the meetings of the Steering Committee itself, which culminated in a 3-day workshop in the Jericho area, which was attended by members of the Committee, the technical team, experts and institutions participating in the regulations and laws. These meetings led to crucial decisions in formulating the strategy. The National Solid Waste Management Authority, which was approved by the Council of Ministers under Resolution 13/49/05 dated 15/5/2010 (Ghoneim, 2010, P: 7).

#### **Institutions and bodies responsible for solid waste management:**

Waste is defined as that waste that can be transported and the owner wishes to dispose of it so that its collection, transportation, treatment and disposal is in the interest of society (Gharaibah, 1998, P: 180). In another definition, solid waste is defined as materials or things that no longer have value or use, but their stay in the environment poses serious dangers to the sources of life in the environment, whether plants, animals or humans (Arnaout, 1999, P: 335). Through the research, we highlight the most important institutions and define their roles and tasks related to solid waste management and their endeavors to achieve the strategic objectives of solid waste management, which emerge as follows:

1. **Ministry of Planning:** It is considered one of the most important tasks assigned to the Ministry of Planning to include solid waste management in national development plans and sub-sectoral strategies related to solid waste.
2. **Environmental Quality Authority:** The Quality Authority has an important role in developing national and strategic plans for solid waste management, defining the required characteristics and specifications for landfill sites, and special instructions for dealing with hazardous waste in terms of storage, treatment, disposal or relocation and issuing special regulations for hazardous waste. The Environment Authority has a role in setting the necessary conditions for organizing, treating, burying or burning solid waste. On the other hand, the Environmental Quality Authority has a role in raising awareness and ensuring that the required environmental data is provided to the public. The Environmental Impact Assessment is the role of the Environmental Quality Authority, as well as monitoring and inspection of solid waste and various facilities and ensuring the enforcement of environmental laws.
3. **Ministry of Local Government:** The Ministry of Local Government has a general role in monitoring and inspecting the activities of local authorities and joint service councils and supporting them financially and technically, in addition to following up and implementing projects related to solid waste management. In addition to the effective role of the Ministry in chairing the Steering Committee for the development of the national strategy for solid waste management and managing the national team to monitor the implementation of that strategy, which came in accordance with the decision of the Council of Ministers.
4. **Ministry of Health:** The Ministry of Health has a role in granting permits for solid waste management facilities and facilities, such as landfills, and the right to apply public health standards for solid waste management activities. According to the Public Health Law, the Ministry has the right to issue conditions related to the transportation, storage and treatment of hazardous waste. This leads to a conflict of roles and authorities with the Environmental Quality Authority, as environmental laws give the Environmental Quality Authority the same roles and authorities.
5. **Palestinian Standards and Metrology Institution:** The Palestinian Standards and Metrology Organization has a role in developing and approving national and international standards related to solid waste management. Moreover, her important role is in chairing the committee responsible for directing and developing technical regulations related to solid waste management.
6. **Palestinian Statistics Authority Center:** One of the most important roles that the center takes on is statistics and information collection, as solid waste management is one of the most important issues that the center deals with. The center has periodic surveys related to household, economic and environmental surveys, and solid waste is one of the most important of these surveys.
7. **Municipal Development and Lending Fund:** The Fund's role is highlighted in directing funds for various projects and activities to local authorities and sometimes to the Joint Services Council. Solid waste activities are among those activities.
8. **Joint Services Councils:** The implementation of the national strategy for solid waste management is one of the most important roles assigned to the Joint Services Councils. In addition to its role in providing services on behalf of local authorities. On the ground, the JSCs have an important role in managing and operating landfills in addition to collecting and transporting waste in the areas of influence of the municipalities contracting with the JSCs (GIZ, 2014).

These authorities are responsible for developing plans, controlling them and implementing them in partnership with municipalities and other concerned authorities.

The national strategy for solid waste management in Palestine is the central and main reference for all decisions, activities and medium-term plans related to this sector. A percentage of (8.3%) of the total expenditures for developing the infrastructure sector will invest in preserving and managing the environment, developing collection facilities and treating solid waste. This will include establishing sanitary landfills, purchasing necessary equipment, and closing informal dumps, in addition to establishing specialized facilities for the treatment of hazardous waste (ARIJ, 2015, p90).

#### **The reality of municipalities' participation in solid waste management:**

Solid waste management needs the participation of all concerned parties. Solid waste management needs capabilities in the field of procurement, contract management, professional management of work and ongoing experience in setting financial budgets. It also needs to share and clarify the responsibilities and duties of the community and municipalities about the location of solid waste (Hoorweg, 2012, p1).

Municipalities constitute the lowest part of governance, representation and accountability to citizens, and they act as potential drivers of development due to their role in providing services to the public. Municipalities face many challenges in performing their tasks. Municipal budgets have declined significantly over the past decade due to the ongoing conflict, economic downturn, mismanagement of municipalities and the growing culture of non-payment, especially after the outbreak of the second intifada, where the deterioration of financial resources in the municipalities led to the deterioration of service coverage for the public. There are main services carried out by the municipalities in general, which are the maintenance of roads and streets, the supply of water to the public and the management of solid waste (This Week in Palestine, 2011).

The problem of solid waste is one of the most complex problems facing municipalities in the Gaza Strip, especially in light of the continuation and intensification of the Israeli siege imposed on the Strip. The problem is divided into two parts, the first is strategic and is represented in the fullness of the three main landfills in the Gaza Strip, which are the Juhr al-Deek landfill, Sufa landfill and Deir al-Balah landfill, and their expiry date to supply more new waste to them, in addition to the scarcity of metal containers that are used to collect waste temporarily in preparation for its transportation. Permanently to landfills. In addition, there is a severe shortage in the number of vehicles that collect and transport waste, in addition to the expiration of the life span of these vehicles and their deterioration.

### Methodology and Procedures:

The study's methodology and procedures are considered a main axis through which the applied aspect of the study is accomplished, and through it the data required to conduct the statistical analysis are obtained to reach the results that are interpreted in the light of the study literature related to the subject of the study, and thus achieve the objectives it seeks to achieve.

### Study Methodology:

In order to achieve the objectives of the study, the researchers used the descriptive-analytical approach, which attempts to describe the phenomenon under study, analyze its data, the relationship between its components, the opinions raised about it, the processes it includes, and the effects that they cause.

The descriptive analytical approach is defined as "the approach that seeks to describe contemporary or current phenomena or events. It is one of the forms of organized analysis and interpretation to describe a phenomenon or problem, It provides data on certain characteristics in reality, and requires knowledge of the participants in the study, the phenomena we study and the times we use to collect data" (Al-Hamdani, 2006, P: 100).

### The researchers used two main sources of information:

1. **Secondary Sources:** In addressing the theoretical framework of the study, the researchers turned to secondary data sources, which are the references, relevant Arabic and foreign books, periodicals, articles and reports, previous research and studies that dealt with the subject of the study, research and reading on various Internet sites.
2. **Primary Sources:** To address the analytical aspects of the subject of the study, the researchers resorted to collecting primary data through a questionnaire as a main tool for the study, designed specifically for this purpose.

### Study population and sample:

The study community is defined as all the vocabulary of the phenomenon studied by the researchers, and based on the study problem and its objectives, the target community consists of the relevant departments in the field of solid waste management in the major municipalities in the Gaza Strip with classification (A) and which amount to 5 municipalities according to the classification of the Ministry of Local Government and shown in the following table:

**Table 1:** shows the distribution of the study population by municipality and district

Target Department	Municipality				
	Jabalia Nazla	Gaza	Deir al-Balah	Khan Younis	Rafah
Shun Finance Department	7	5	10	5	4
Legal Affairs Department	10	8	8	6	10
Department of Health and Environment	7	7	10	2	7
Total employees	24	20	28	13	21
<b>Total</b>	<b>106</b>				


**Source:** Interviews with Personnel Departments in the Targeted Municipalities (2021)

The researchers used the comprehensive "survey" method, where the questionnaire was distributed to all members of the study community, which numbered (106) employees, and (70) questionnaires were retrieved, at a rate of (66%).

**Research Instrument**

A questionnaire was prepared to measure the "policy of solid waste management work in the major municipalities in the southern Palestinian governorates", and a scale from 1-10 was used for the questionnaire's paragraphs, so that whenever the degree approached 10, it indicated a high approval of what was stated in the statement and vice versa, as in the following table:

**Table 2:** The scale scores used in the questionnaire

Response	I Agree Very Low									I Agree Very Much
Class	1	2	3	4	5	6	7	8	9	10

**Steps to Build the Questionnaire:** The researchers prepared the study tool to know the "policy of solid waste management work in the major municipalities in the southern Palestinian governorates." The questionnaire was designed and the questionnaire was presented to a number of arbitrators from faculty members in Palestinian universities. In light of the opinions of the arbitrators, some paragraphs of the questionnaire were modified in terms of deletion, addition and modification, so that the questionnaire settled in its final form.

**Validity and Reliability Assessment**

**The Validity Of The Questionnaire:** The validity of the questionnaire means “that the questionnaire measures what it was designed to measure” (Al-Jerjawi, 2010, P: 105), and honesty means “the survey’s inclusion of all the elements that must be included in the analysis on the one hand, and the clarity of its paragraphs and vocabulary on the other hand, So that it is understandable to everyone who uses it” (Obeidat et al., 2001, P: 179). The validity of the questionnaire was confirmed in two ways:

1. **The Validity of the Arbitrators’ Opinions:** “It is for researchers to choose a number of arbitrators specialized in the field of the phenomenon or problem under study” (Al-Jerjawi, 2010, P: 107). The questionnaire was presented to a group of specialized arbitrators. The researchers responded to the arbitrators’ opinions and conducted a procedure the necessary deletion and modification in light of the proposals presented, thus the questionnaire came out in its final form.

2. **Scale Validity:**

**First: Internal Consistency**

The internal consistency is honestly the extent of the consistency of each paragraph of the questionnaire with the domain to which this paragraph belongs. The researchers calculated the internal consistency of the questionnaire by calculating the correlation coefficients between each paragraph of the questionnaire fields and the total score for the field itself.

**- Internal consistency of “solid waste management work policy factors”**

The following table shows the correlation coefficient between each paragraph of the "legal and legislative framework" field and the total score of the field, which shows that the indicated correlation coefficients are a function at the level of significance ( $\alpha \leq 0.05$ ), and thus the field is considered true for what was set to measure it.

**Table 3:** The validity coefficients for each paragraph with the total degree of its domain

Solid Waste Management Work Policies											
Legal And Legislative Framework			Efficiency Of Working Staff			The Size Of The Private Sector's Participation			Sustainability And Financial Efficiency		
Item No.	Honesty Coefficient	Indication Level	Item No.	Honesty Coefficient	Indication Level	Item No.	Honesty Coefficient	Indication Level	Item No.	Honesty Coefficient	Indication Level
1	.643*	0.000	1	.681*	0.000	1	.790*	0.000	1	.736*	0.000
2	.704*	0.000	2	.749*	0.000	2	.732*	0.000	2	.811*	0.000
3	.746*	0.000	3	.816*	0.000	3	.839*	0.000	3	.815*	0.000
4	.845*	0.000	4	.766*	0.000	4	.872*	0.000	4	.770*	0.000
5	.733*	0.000	5	.862*	0.000	5	.865*	0.000	5	.620*	0.000
6	.674*	0.000	6	.600*	0.000	6	.834*	0.000	6	.701*	0.000
The Extent Of The Adoption Of Information And Control Systems			Handling Of Hazardous And Medical Waste			Environmentally Safe Work Mechanisms For Solid Waste Management Services			Community Awareness Of Solid Waste Management Issues		
1	.830*	0.000	1	.846*	0.000	1	.628*	0.000	1	.852*	0.000
2	.858*	0.000	2	.822*	0.000	2	.727*	0.000	2	.896*	0.000
3	.878*	0.000	3	.870*	0.000	3	.728*	0.000	3	.885*	0.000
4	.904*	0.000	4	.862*	0.000	4	.821*	0.000	4	.864*	0.000
5	.849*	0.000	5	.873*	0.000	5	.730*	0.000	5	.916*	0.000
6	.685*	0.000	6	.867*	0.000	6	.753*	0.000	6	.901*	0.000
			7	.446*	0.000	7	.683*	0.000			
						8	.751*	0.000			

\*The correlation is statistically significant at the level of significance ( $\alpha \leq 0.05$ ).

**Second: Structural Validity**

Structural validity is one of the measures of validity of the tool that measures the extent to which the goals that the tool wants to reach, and it shows the extent to which each field of study is related to the total score of the questionnaire items (Sulaiman, 2011). The following table shows that all correlation coefficients in all areas of the questionnaire are statistically significant at the level of significance ( $\alpha \leq 0.05$ ), and thus all areas of the questionnaire are considered to be true for what they were designed to measure.

**Table 4:** Correlation coefficient between the score of each field of the questionnaire and the total score of the questionnaire

Field	Pearson's Coefficient Of Correlation	P-Value (Sig.)
Legal and legislative framework.	.575*	0.000
Efficiency of cadres working in the field of solid waste management.	.791*	0.000
The extent of private sector participation.	.786*	0.000
Sustainability and financial efficiency.	.739*	0.000
The size of the adoption of information and control systems.	.857*	0.000
Handling of hazardous and medical waste.	.605*	0.000
Environmentally safe work mechanisms for solid waste management services.	.857*	0.000
Community awareness of solid waste management issues.	.808*	0.000
Solid waste management policy factors.	.993*	0.000

\*The correlation is statistically significant at the level of significance ( $\alpha \leq 0.05$ ).

**Stability of the Questionnaire:**

The stability of the questionnaire is intended to give the questionnaire the same results if it is re-applied several times in a row. It also means to what degree the scale gives close readings every time it is used, or what is the degree of its consistency, consistency and continuity when repeated use at different times (Al-Jerjawi, 2010, p: 97).

The researchers verified the stability of the study's resolution through Cronbach's Alpha Coefficient, and the results were as shown in the following table:

**Table 5:** Cronbach's alpha coefficient for measuring resolution stability

Field	No. of Items	Cronbach's Alpha
Legal and legislative framework.	6	0.816
Efficiency of cadres working in the field of solid waste management.	6	0.838
The extent of private sector participation.	6	0.900
Sustainability and financial efficiency.	6	0.831
The size of the adoption of information and control systems.	6	0.906
Handling of hazardous and medical waste.	7	0.905
Environmentally safe work mechanisms for solid waste management services.	8	0.871
Community awareness of solid waste management issues.	6	0.943
Solid waste management policy factors.	51	0.962

It is clear from the results shown in the previous table that the value of Cronbach's alpha coefficient is high for each domain, ranging between (0.816, 0.969), while it reached for all paragraphs of the questionnaire (0.973), and this means that the stability is high and statistically significant.

The researchers have ensured the validity and reliability of the study questionnaire, which makes them fully confident in the validity and validity of the questionnaire to analyze the results, answer the study questions and test its hypotheses.

**Data Analysis, Test Hypotheses and Discussion of Results**

It includes a presentation of data analysis and testing hypotheses of the study, by answering the study questions and reviewing the most prominent results of the questionnaire, which were reached by analyzing its paragraphs, and identifying the personal data of the respondents. Statistical packages for social studies (SPSS) to obtain the results of the study that were presented and analyzed.

**The criterion adopted in the study (Ozen et al., 2012):**

To interpret the results of the study and judge the level of response, the researchers relied on the arrangement of arithmetic averages at the level of the domains of the questionnaire and the level of items in each domain. The researchers determined the degree of approval according to the test approved for the study, as shown in the following table:



**Table 6:** Shows the criteria used in the study

SMA	Relative Weight	Degree Of Approval
From 1- 2.8	From 10% - 28%	Very Low
Greater than 2.8 - 4.6	Greater than %28- %46	Low
Greater than 4.6 - 6.4	Greater than 46% -64	Medium
Greater than 6.4 - 8.2	Greater than 64% -82	Large
Greater than 8.2-10	Greater than 82%-100%	Very Large

**Analyze the paragraphs of the questionnaire:****First: Analysis of the paragraphs of "Solid Waste Management Policy Factors"****- Analysis of the paragraphs of the field of "legal and legislative framework".**

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 7:** Arithmetic mean, standard deviation, relative weight, order and T-test for each paragraph of the "legal and legislative framework" field

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	The legal framework provides administrative hierarchies and special roles for solid waste management.	6.89	1.85	68.86	1	Large	6.25	0.000
2.	The legal framework addresses the issues of involving the local community and the private sector in the solid waste system.	5.97	1.82	59.71	5	Medium	2.15	0.018
3.	The legal framework for sanctions is based on the "polluter pays" and "producer pays" principles.	5.14	2.16	51.45	6	Medium	-1.36	0.089
4.	The legal and legislative framework for solid waste management is consistent with other relevant Palestinian laws and regulations.	6.36	1.77	63.57	2	Medium	4.05	0.000
5.	The legal framework includes the necessary implementing regulations to activate the proper management of solid waste.	6.33	1.57	63.29	3	Medium	4.42	0.000
6.	The legal framework is compatible with international treaties and covenants and is compatible with the Palestinian situation.	6.03	1.69	60.29	4	Medium	2.62	0.005
<b>All Paragraphs Of The Field Together</b>		6.12	1.31	61.24		Medium	3.99	0.000

From the previous table the following can be drawn:

- The arithmetic average for the first paragraph "provides the legal framework for the administrative hierarchy and special roles for solid waste management" equals (6.89) (total score out of 10), meaning that the relative weight (68.86%) and this means that there is a large approval by the sample members on this paragraph.
- The arithmetic mean of the third paragraph, "The legal framework depends on penalties on the principle of (polluter pays) and (product pays)" is equal to (5.14), meaning that the relative weight is (51.45%), and this means that there is a medium degree of approval by the sample members on this paragraph.

- In general, it can be said that the arithmetic average for the field of "legal and legislative framework" is (6.12), meaning that the relative weight is (61.24%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field.

The researchers attribute this to the presence of weaknesses in the imposed legal framework, which should be the main supporter and regulator for the operations of solid waste management, financially and practically, in addition to not following the necessary guidelines and regulations for the safe disposal of waste, and working transparently in accordance with the needs and plans of local bodies and joint councils.

These results agreed with some of the results of previous studies such as the study (Soufan, 2012) and the study (Madani, 2009), which were the most important results of the weakness in the enforcement of laws related to solid waste management with the lack of activation of those laws and regulations that regulate the operations of solid waste management.

In addition to the agreement of the study with some of the results of previous Arab studies such as the study (Haidara, 2016) and the study (Taher and Hassan, 2012) which analyze the effectiveness of legal texts related to solid waste management and environmental laws in general, the most important of which was the presence of shortcomings in the laws and regulations related to the management of solid waste. Solid waste and neglect of these laws. Interest in involving the private sector and civil society in the solid waste management system.

As for foreign studies, the results of the current study agreed with the study of some foreign studies, such as the study (Arzumany, 2004). There is a weakness and conflict in the regulations and laws of solid waste management, with no commitment to special regulations and laws in dealing with solid waste management by the concerned authorities.

- **Analysis of the paragraphs of the field of "efficiency of cadres working in the field of solid waste management"**

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 8:** Arithmetic mean, standard deviation, relative weight, arrangement and T-test for each paragraph of the field of "efficiency of cadres working in the field of solid waste management"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	Local institutions seek to build their expertise by exchanging experiences with external bodies and institutions.	5.71	2.07	57.14	3	Medium	0.87	0.195
2.	Cadres and institutions working in the field are subject to training courses with external parties.	5.41	1.75	54.14	5	Medium	-0.41	0.341
3.	Institutional and individual capacities are continuously developed and built.	5.30	1.88	53.00	6	Medium	-0.89	0.189
4.	Documenting and publishing successful scientific practices in the field of solid waste.	5.70	2.22	57.00	4	Medium	0.76	0.226
5.	There is a systematic and continuous assessment of needs and priorities to build human resource capacity.	5.74	2.00	57.43	2	Medium	1.01	0.157
6.	The various needs of the necessary equipment and machinery are continuously evaluated.	6.37	1.99	63.71	1	Medium	3.67	0.000

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
	<b>All Paragraphs Of The Field Together</b>	5.71	1.48	57.07		Medium	1.17	0.123

From the previous table the following can be drawn:

- The arithmetic average for the sixth paragraph, "the various needs of equipment and machinery needed on an ongoing basis" are evaluated equal to (6.37) (total score out of 10), meaning that the relative weight is (57.07%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- The arithmetic average for the third paragraph, "the development and building of institutional and individual capacities is done on an ongoing basis" is 5.30, meaning that the relative weight is (53.00%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- In general, it can be said that the arithmetic average for the field of "efficiency of cadres working in the field of solid waste management" is (5.71), meaning that the relative weight is (57.07%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field.

The results are attributed to the lack of required attention to cadres related to solid waste management, the development of work mechanisms and cadres working in the field on an ongoing basis to ensure the safety and security of solid waste management processes and increasing the participation of donors and government private entities in developing and building the capacities of these cadres.

Where the results of the current study agreed with the study (Soufan, 2012) about the presence of weakness in the cadres working in solid waste management in municipalities with the lack of sufficient training for these cadres in dealing with various wastes and gaining experience through practical work practice, which exposes many of them to the risks of infection and disease different as a result of direct exposure to these wastes.

#### - Analysis of the paragraphs of the field "the volume of private sector participation"

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table.

**Table 9:** Arithmetic mean, standard deviation, relative weight, order, and T-test for each paragraph of the "Private Sector Participation Size" field

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	There are economic and environmental feasible models for waste separation and recycling.	3.45	1.96	34.49	6	Low	-8.69	0.000
2.	The system of incentives such as loans, facilities and tax exemptions helps to encourage the private sector.	3.97	2.18	39.71	3	Low	-5.84	0.000
3.	There is funding for studies that aim to involve the private sector in the solid waste system.	3.65	1.90	36.52	5	Low	-8.08	0.000
4.	Collection and fee systems seek to increase the role of the private sector in this field.	3.96	2.14	39.57	4	Low	-6.00	0.000
5.	The private sector helps to permanently reduce the quantities of solid	4.04	2.44	40.43	1	Low	-5.00	0.000

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
	waste transferred to landfills.							
6.	The private sector contributes to reducing the negative impact of solid waste on health and the environment.	3.97	2.52	39.71	2	Low	-5.08	0.000
<b>All Paragraphs Of The Field Together</b>		3.88	1.84	38.81		Low	-7.34	0.000

From the previous table the following can be drawn:

- The arithmetic average for the fifth paragraph "helps the private sector to reduce the quantities of solid waste transferred to landfills permanently" equals (4.04) (total score out of 10), meaning that the relative weight is (40.43%), and this means that there is a low degree of approval by the sample members on this paragraph.

- The arithmetic average for the first paragraph "there are models of economic and environmental feasibility for the separation and recycling of waste" equals 3.45, meaning that the relative weight is (34.49%), and this means that there is a low degree of approval by the sample members on this paragraph.

In general, it can be said that the arithmetic average for the field of "the size of the private sector participation" is 3.88, meaning that the relative weight is (38.81%), and this means that there is a low degree of approval by the sample members on the paragraphs of this field.

The results show the urgent need to pay attention to the role of the private sector and to provide the assistance required for the success of this type of project because of its economic benefits such as reducing unemployment and providing a number of jobs to work in that field, in addition to its role in reducing the quantities of waste coming to landfills through the establishment of the sector For the utilization of these wastes in the processes of recycling, reuse or energy production.

#### - Analysis of the paragraphs of the field "Sustainability and Financial Efficiency"

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 10:** Arithmetic mean, standard deviation, relative weight, order and T-test for each paragraph of the field of "Sustainability and Financial Efficiency"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	Collect and transport waste at the lowest possible costs.	5.37	2.30	53.71	3	Medium	-0.47	0.321
2.	There are accounting and scientific systems and plans to reduce the cost of solid waste collection and transportation.	5.49	2.10	54.86	2	Medium	-0.06	0.477
3.	There are parallel effective collection systems to recover the costs of the service provided.	4.59	2.05	45.86	4	Low	-3.74	0.000
4.	The fees charged are proportional to the costs of the service provided.	4.54	2.36	45.36	5	Low	-3.40	0.001
5.	Solid waste management projects are implemented depending on external	5.96	2.50	59.57	1	Medium	1.52	0.067

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
	funding and multiple financing channels.							
6.	Recovers the cost of solid waste services provided to citizens.	4.12	2.30	41.16	6	Low	-4.99	0.000
<b>All Paragraphs Of The Field Together</b>		5.02	1.67	50.16		Medium	-2.42	0.009

From the previous table the following can be drawn:

- The arithmetic mean of the fifth paragraph, "Projects related to solid waste management are implemented depending on external funding and multiple financing channels" is equal to (5.96) (total score out of 10), meaning that the relative weight is (59.57%), and this means that there is a medium degree of approval by the sample members on this paragraph.

- The arithmetic average for the sixth paragraph, "the cost of solid waste services provided to citizens" is recovered equal to (4.12), meaning that the relative weight is (41.16%), and this means that there is a low degree of approval by the sample members on this paragraph.

- In general, it can be said that the arithmetic average for the field of "sustainability and financial efficiency" is equal to (5.02), meaning that the relative weight is (50.16%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field. The most important results of the axis show that the financial support is limited to the special file of the solid waste management sector, which does not provide sufficient support to provide the required service to citizens, and the lack of financial systems to collect and collect service costs and rely heavily on external funding to support the waste sector.

The results of the current study agreed with some previous local studies, such as the study (Sabri, 2013) in the presence of weakness in financial efficiency and the collection of service fees provided by municipalities to the public, which are not commensurate with the cost of the service provided.

- **Analysis of the paragraphs of the field "the size of the adoption of information and control systems"**

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 11:** Arithmetic mean, standard deviation, relative weight, arrangement and T-test for each paragraph of the field of "Information and Control Systems Adoption Size"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	There is a realistic database related to solid waste sectors and systems.	5.63	1.83	56.29	2	Medium	0.59	0.279
2.	Reliance on databases in making appropriate decisions.	5.61	1.78	56.14	3	Medium	0.54	0.296
3.	Uses relevant information systems in control operations.	5.71	1.97	57.10	1	Medium	0.89	0.189
4.	Information and data related to solid waste management are characterized by consistency and availability of their sources.	5.60	1.66	56.00	4	Medium	0.50	0.308
5.	Waste control systems depend on indicators of environmental, technical and financial control.	5.54	2.08	55.43	5	Medium	0.17	0.432

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
6.	There is a unified and integrated system for solid waste management at the national level.	4.96	2.24	49.57	6	Medium	-2.03	0.023
<b>All Paragraphs Of The Field Together</b>		5.51	1.59	55.10		Medium	0.05	0.479

From the previous table the following can be drawn:

- The arithmetic average for the third paragraph, "the relevant information systems are used in the control operations" equals (5.71) (total score out of 10), meaning that the relative weight is (57.10%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- The arithmetic average for the sixth paragraph, "there is a unified and integrated system for solid waste management at the national level" is equal to (4.96), meaning that the relative weight is (49.57%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- In general, it can be said that the arithmetic average for the field of "the size of the adoption of information and control systems" is equal to (5.51), meaning that the relative weight is (55.10%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field. It was found from that axis that the concerned authorities lack the required control and administrative systems. In addition, these results show the importance of having a unified database that can be used in research and studies, and to give the required indicators related to solid waste management. The results of the current study differ with the study (Soufan, 2012), the most important of which was that the institutions related to solid waste management have strong information systems, which is the opposite of the results of the current study.
- **Analysis of the paragraphs of the field "Dealing with hazardous and medical waste"**

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 12:** Arithmetic mean, standard deviation, relative weight, order and T-test for each paragraph of the field of "handling of hazardous and medical waste"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	There are adequate and standardized systems for inventory and tracking of hazardous wastes and the provision of necessary information about them.	4.20	2.27	42.00	7	Low	-4.79	0.000
2.	Waste management systems reduce the negative impact of hazardous and medical waste according to the "polluter pays" principle.	4.33	2.35	43.29	6	Low	-4.17	0.000
3.	Medical waste is stored and treated in safe and sound ways.	4.51	2.19	45.14	5	Low	-3.77	0.000
4.	The control of medical waste is carried out effectively ensuring environmental and health safety.	4.54	2.13	45.43	4	Low	-3.76	0.000
5.	Medical waste is separated from the rest of the waste according to the laws and guidelines.	4.56	2.29	45.57	3	Low	-3.45	0.000

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
6.	The necessary legal and institutional frameworks for dealing with medical and hazardous waste are available.	4.80	2.40	48.00	2	Medium	-2.44	0.009
7.	Hazardous waste is permanently disposed of in landfills with other waste	5.54	2.43	55.36	1	Medium	0.12	0.451
<b>All Paragraphs Of The Field Together</b>		4.64	1.82	46.42		Medium	-3.94	0.000

From the previous table the following can be drawn:

- The arithmetic mean of the seventh paragraph, "hazardous waste is permanently disposed of in landfills with other waste" equals (5.54) (total score out of 10), meaning that the relative weight is (55.36%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- The arithmetic average for the first paragraph "there are appropriate and standardized systems for inventory and tracking of hazardous waste and the availability of the necessary information about it" is equal to (4.20), meaning that the relative weight is (42.00%), and this means that there is a low degree of approval by the sample members on this paragraph.
- In general, it can be said that the arithmetic average for the field of "dangerous and medical waste" is (4.64), meaning that the relative weight is (46.42%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field. This axis shows the urgent need to restore the systems for the management of medical and hazardous waste due to its environmental danger, and to separate it from the rest of the other waste through its main source, namely hospitals and medical laboratories, in addition to allocating special containers for it.

Whereas, the previous studies agreed with the current study, such as the study (Bani Shamsa, 2012) in terms of evaluating medical waste management in medical laboratories and assessing occupational safety, the most important of which was the presence of shortcomings in dealing with medical waste and its proper management, and a study (Li Nie, 2014), which Its results are in agreement with the results of the current study in the presence of deficiencies in the systems for dealing with medical waste and their failure to sort them properly.

A study (Ferdowsi & others, 2012) carried out by a group of researchers in Iran on realistic waste management practices in hospitals in the city of Isfahan, whose results agree with the current study on the existence of shortcomings in the management of medical waste in terms of sorting it from other waste.

**- Analysis of the paragraphs of the field "Environmentally safe working mechanisms for solid waste management services"**

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 13:** Arithmetic mean, standard deviation, relative weight, order and T-test for each paragraph of the field of "Environmentally safe work mechanisms for solid waste management services"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	Advanced solid waste collection and transportation management and services systems are available to all citizens.	5.19	2.09	51.86	7	Medium	-1.26	0.107
2.	The working mechanisms dispose of waste efficiently.	5.20	2.04	52.00	5	Medium	-1.23	0.111
3.	The work mechanisms reduce the amount of solid waste coming to sanitary landfills.	4.84	1.97	48.43	8	Medium	-2.79	0.003

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
4.	The working mechanisms work to reduce the environmental impacts of the waste.	5.58	1.98	55.80	4	Medium	0.33	0.370
5.	Working mechanisms work to close random dumps.	6.26	2.28	62.57	1	Medium	2.78	0.004
6.	Working mechanisms reduce gas emissions from solid waste activities.	5.71	1.92	57.14	3	Medium	0.93	0.177
7.	Working mechanisms in particular deal with medical and private waste properly.	5.20	1.99	52.00	5	Medium	-1.26	0.106
8.	Work mechanisms seek to rehabilitate random dumps to reduce their negative effects.	5.91	2.35	59.14	2	Medium	1.47	0.072
<b>All Paragraphs Of The Field Together</b>		5.49	1.51	54.90		Medium	-0.06	0.478

From the previous table the following can be drawn:

- The arithmetic mean of the fifth paragraph, "The mechanisms of action work to close random dumps" equals (62.57) (total score out of 10), meaning that the relative weight is (62.57%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- The arithmetic average of the third paragraph, "The work mechanisms reduce the amount of solid waste received by sanitary landfills" is equal to (4.84), meaning that the relative weight is (48.43%), and this means that there is a medium degree of approval by the sample members on this paragraph.

In general, it can be said that the arithmetic average for the field of "environmentally safe work mechanisms for solid waste management services" is (5.49), meaning that the relative weight is (54.90%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field. This axis shows the importance of the national strategy for solid waste management in finding environmentally safe work mechanisms that can deal with the increasing amounts of waste and the processes for collecting waste periodically, as these processes are tainted by many shortcomings.

These results agreed with some studies such as (Al-Agha, 2013), which found the most important results of a weakness in the efficiency of work mechanisms to remove waste with a weakness in coordination with the various authorities in solid waste management.

#### - Analysis of the paragraphs of the field of "community awareness of solid waste management issues"

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 14:** Arithmetic mean, standard deviation, relative weight, arrangement and T-test for each paragraph of the field of "Social awareness of solid waste management issues"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	Awareness programs are designed to achieve partnership between the public and private sectors.	5.40	2.45	54.00	5	Medium	-0.34	0.367



#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
2.	Awareness programs include a number of issues such as the random dumping of waste.	6.22	2.58	62.17	1	Medium	2.31	0.012
3.	Awareness programs affect the behavior of the community.	5.46	2.13	54.64	3	Medium	-0.14	0.444
4.	Awareness programs provide provisions that may be issued against violators of regulations and laws.	5.64	2.19	56.38	2	Medium	0.52	0.302
5.	There are special programs to enhance the awareness of workers in the field about dealing with solid waste.	5.45	2.08	54.49	4	Medium	-0.20	0.420
6.	There is a partnership in activities between the public and private sectors on the solid waste file	5.17	2.40	51.74	6	Medium	-1.13	0.132
<b>All Paragraphs Of The Field Together</b>		5.55	2.03	55.50		Medium	0.21	0.419

From the previous table the following can be drawn:

- The arithmetic average of the second paragraph, "awareness programs include a number of issues such as the phenomenon of random dumping of waste" equals (6.22) (total score out of 10), meaning that the relative weight is (62.17%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- The arithmetic mean of the sixth paragraph, "there is a partnership in activities between the public and private sectors around the solid waste file" is equal to (5.17), meaning that the relative weight is (51.74%), and this means that there is a medium degree of approval by the sample members on this paragraph.
- In general, it can be said that the arithmetic average for the field of "community awareness of solid waste management issues" is (5.55), meaning that the relative weight is (55.50%), and this means that there is a medium degree of approval by the sample members on the paragraphs of this field. This axis shows the importance of social awareness of issues related to the environment and waste, as they have a major role in highlighting the importance of individuals in the solid waste system, such as carrying out waste sorting and preserving the environment.

The results of the current study agree with the study (Hamdan, 2012) on the existence of a lack of awareness and environmental assessment among citizens about issues related to solid waste management. As for the study (Shaheen et al., 2014), the results of which were in agreement with the current study on the lack of awareness among the public about issues related to the environment in general and solid waste in particular. As for the study (Al-Karout and Al-Tuwaijri, 2012), the most important results of which are different from the current study on the existence of a strong positive impact of educational programs on the behavior and attitudes of society towards issues related to solid waste management.

#### - Analysis of all the paragraphs of the solid waste management policy factors

The arithmetic mean, standard deviation, relative weight, rank and T-test were used to determine the degree of agreement. The results are shown in the following table:

**Table 15:** Arithmetic mean, standard deviation, relative weight, order and T-test for all paragraphs of "Solid waste management work policy factors"

#	Item	SMA	Standard Deviation	Relative Weight	Ranking	Degree Of Approval	Test Value	Probability Value
1.	Legal and Legislative Framework	6.12	1.31	61.24	1	Medium	3.99	0.000
2.	Efficiency of cadres working in the field of solid waste management	5.71	1.48	57.07	2	Medium	1.17	0.123
3.	The size of the private sector's participation	3.88	1.84	38.81	8	Low	-7.34	0.000
4.	Sustainability and Financial Efficiency	5.02	1.67	50.16	6	Medium	-2.42	0.009
5.	The extent of adoption of information and control systems	5.51	1.59	55.10	4	Medium	0.05	0.479
6.	Handling of hazardous and medical waste	4.64	1.82	46.42	7	Medium	-3.94	0.000
7.	Environmentally safe work mechanisms for solid waste management services	5.49	1.51	54.90	5	Medium	-0.06	0.478
8.	Community awareness of solid waste management issues	5.55	2.03	55.50	3	Medium	0.21	0.419
<b>All Paragraphs Of The Field Together</b>		5.24	1.25	52.39		Medium	-1.75	0.042

From the previous table, it was found that the arithmetic mean of all the paragraphs of the solid waste management policy factors is equal to (5.24) (the total score out of 10), meaning that the relative weight is (52.39%), and this means that there is a medium degree of approval by the sample members on the paragraphs in general. The study has selected these axes as key factors for the policy of work in solid waste management by reviewing the National Strategy for Solid Waste Management (2010-2014), which was one of its most important objectives.

**Ho<sub>1</sub>:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the impact of solid waste management policy factors on the implementation of the national strategy due to personal data (the municipality, the competent department).

The T-test for two independent samples was used to see if there were statistically significant differences, and it is a parameter test that is suitable for comparing the averages of two data sets. The "one-way variance" test was also used to find out if there were statistically significant differences, and this test is parametric, suitable for comparing 3 averages or more.

**The following sub-hypotheses are derived from this main hypothesis:**

**Ho<sub>1.1</sub>:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the reality of solid waste management work policies attributable to the municipality.

From the results shown in the following table, it was found that the probabilistic value (Sig.) corresponding to the "one-way variance" test is greater than the significance level (0.05) for all domains and domains combined together. Thus, it can be concluded that there are no statistically significant differences between the average estimates of the study sample about these domains. The domains together are attributable to the municipality. This is due to the direct contact of municipalities with solid waste management processes and the frequent interaction of donors and various government departments with municipalities, which gives them more experience in dealing with solid waste.

**Table 16:** Results of the "mono-variance" test – municipality

Field	Averages					Test Value	P-Value (Sig.)
	Jabalia Nazla	Gaza	Deir al-Balah	Khan Younis	Rafah		

Legal and Legislative Framework	5.73	6.05	6.79	5.89	6.50	1.409	0.241
Efficiency of cadres working in the field of solid waste management	5.26	5.31	6.00	6.26	5.86	1.294	0.282
The size of the private sector's participation	4.41	3.52	2.71	3.69	4.40	1.711	0.158
Sustainability and Financial Efficiency	4.98	5.33	5.02	4.59	5.18	0.398	0.809
The extent of adoption of information and control systems	5.21	5.80	5.50	5.74	5.36	0.371	0.829
Handling of hazardous and medical waste	4.74	5.38	3.64	4.03	4.96	1.810	0.138
Environmentally safe work mechanisms for solid waste management services	5.49	5.47	5.20	5.53	5.62	0.098	0.983
Community awareness of solid waste management issues	5.16	5.36	5.69	5.67	5.96	0.361	0.835
Solid waste management policy factors	5.13	5.29	5.05	5.17	5.48	0.235	0.917

**H01-2:** There are statistically significant differences at the level ( $\alpha \leq 0.05$ ) between the averages of the respondents' answers about the reality of solid waste management work policies that are attributed to the competent department.

From the results shown in the previous table, it was found that the probabilistic value (Sig.) corresponding to the "single variance" test is greater than the significance level (0.05) for the field of "handling of hazardous and medical waste" and thus it can be concluded that there are no statistically significant differences between the average estimates of the study sample About this area attributable to the circle. This is due to the specialization of these departments and their direct connection to the operations of solid waste management, which distinguishes them from the rest of the other departments, which have no participation in the management of solid waste.

As for the rest of the fields and fields combined together, it was found that the probabilistic value (Sig.) is less than the significance level (0.05), and thus it can be concluded that there are statistically significant differences between the average estimates of the study sample about these areas attributed to the department, in favor of those who work in the department. Health and the environment.

Looking at the results, we see that the Department of Health and Environment is more agreeable than the rest of the other departments due to the nature of the direct work of the solid waste file, and the great experience and knowledge that goes beyond other departments.

**Table 17:** Results of the "Monovariate" test - the competent department

Field	Averages			Test Value	P-Value (Sig.)
	Legal	Financial	Health and Environment		
Legal and Legislative Framework	5.38	6.61	6.46	7.113	*0.002
Efficiency of cadres working in the field of solid waste management	4.81	6.08	6.24	8.288	*0.001
The size of the private sector's participation	3.06	4.38	4.26	3.922	*0.024
Sustainability and Financial Efficiency	4.01	5.31	5.67	8.266	*0.001
The extent of adoption of information and control systems	4.58	5.85	6.07	7.416	*0.001
Handling of hazardous and medical waste	4.76	4.87	4.40	0.433	0.650
Environmentally safe work mechanisms for solid waste management services	4.98	5.13	6.13	4.918	*0.010
Community awareness of solid waste management issues	4.17	5.63	6.64	13.209	*0.000
Solid waste management policy factors	4.50	5.46	5.73	8.060	*0.001

\* The difference between the means is statistically significant at the significance level ( $\alpha \leq 0.05$ ).

### Conclusions

The following Results and recommendations were reached:

- The study concluded a set of important results based on measuring the effectiveness of the factors of work policies for solid waste management, as the national strategy did not give its axes the appropriate relative importance, as it is noted that the volume of private sector participation is very low at (38.81%) and the reason for this is due to the lack of financial facilities The investment required to support this type of project. In addition, there are shortcomings in the collection-for-service systems, which many investors are reluctant to invest in this field.
- In addition, the ineffectiveness of the administrative and control systems related to the medical waste management process, which amounted to (46.42%), as the sorting of medical waste from the rest of the other waste does not take place in the required manner.
- As for sustainability and financial efficiency, which is one of the most important axes of the national strategy that has a fundamental impact on the management of the solid waste system, it is noted that there are many shortcomings (50.16%). With the assistance of donors to finance solid waste management operations.
- Looking at the work mechanisms for solid waste management, the respondents see in general that there is a need to update work mechanisms to provide the required service to the population, where the percentage reached (54.90%). Considering this, the focus of work mechanisms for solid waste management needs to increase public awareness of the services provided to them and their involvement In that system because of its impact on facilitating work mechanisms for solid waste management, the result reached (50.50%), which shows the urgent need for concerted efforts of government agencies and NGOs in raising awareness and changing behavior related to issues related to solid waste management.
- The respondents believe that there is an urgent need to adopt information and control systems, which may be used in many studies, and to develop the necessary indicators for control and dealing with the ever-increasing quantities of waste.
- The efficiency of workers in the waste sector plays an important role in the continuous development of dealing with solid waste, as the percentage reached (57.07%), which is considered a high percentage compared to the rest of the main pillars of the national strategy for solid waste management. The researchers attribute this to the continuous exchange of experiences with the competent authorities and the subjecting of these cadres to training processes with external parties. All of which play a key role in achieving the objectives of the National Solid Waste Management Strategy.
- And considering the evaluation of the legal framework from the respondents' point of view, which is the highest percentage compared to other axes of work policy factors for solid waste management, which amounted to (61.24%), which is due, from the researchers' point of view, to the need to re-review the special provisions, legislation and laws related to solid waste management, in addition to define the responsibilities of the relevant authorities through laws to avoid conflicting roles, tasks and responsibilities.

### Recommendations

By reviewing the results mentioned in the practical framework, the study concluded a set of recommendations, which are mentioned as follows:

- Work continuously and uninterruptedly to develop cadres and institutions working in the field of solid waste.
- Providing economic and environmental feasibility models for solid waste separation in order to encourage the private sector to engage in the solid waste system.
- Providing government facilities and tax exemptions, which in turn help create an encouraging investment environment for the private sector in the waste field.
- Carrying out the full financing of environmental studies, which helps the private sector in identifying priorities for work in the various areas of solid waste.
- Helping the private sector to advance in this field by providing effective collection systems to recover costs and maintain services.
- Promoting the private sector because of its economic importance, such as providing job opportunities and environmental importance, by reducing the negative impact of solid waste on health and the environment.
- Work to recover the cost provided for services related to solid waste management through effective collection systems to ensure sustainability and financial efficiency and try to reduce dependence on external financing.
- Charging fees commensurate with the costs of receiving the service.
- Work to find a unified and integrated work system for solid waste management at the national level to ensure the provision of necessary information about solid waste and its control.

- Develop regulatory systems, especially for medical waste management, to reduce the negative impact of such waste and impose fines.
- Working on storing, separating and treating medical waste in environmentally sound and safe ways.
- Reducing the quantities of solid waste received by health landfills by developing mechanisms of action in partnership with citizens through awareness programs and other various environmental programs.
- Activating the partnership between the public and environmental sectors on issues related to solid waste management through social and awareness programs to demonstrate the importance of the solid waste file and the role of individuals in that system.

## References

- [1]Ahmad, H. R., et al. (2020). "The Reality of Applying Recruitment Criteria for Coastal Municipalities Water Utility Company." *International Journal of Academic Information Systems Research (IJAISR)* 4(3): 31-52.
- [2]Al Hila, A. A., et al. (2017). "The Effect of Academic Freedoms in Enhancing the Social Responsibility of Palestinian University Staff in the Gaza Governorates." *International Journal of Engineering and Information Systems (IJEAIS)* 1(5): 22-35.
- [3]Al Shobaki, M. J. and S. S. Abu Naser (2016). "The reality of modern methods applied in process of performance assessments of employees in the municipalities in Gaza Strip." 1(7): 14-23.
- [4]Al-Agha, Reem (2013). *Assessment of solid waste management in Khan Younis governorate, Palestine: Gaza Strip.*
- [5]Al-Habil, W. I., et al. (2017). "The Impact of the Quality of Banking Services on Improving the Marketing Performance of Banks in Gaza Governorates from the Point of View of Their Employees." 1(7): 197-217.
- [6]Al-Hamdani, Mwafaq (2006). *Research Methodology.* Amman: Al-Warraq Publishing Corporation.
- [7]Alhelou, E. M. S., et al. (2017). "The Quality of Banking Services as an Input to Improve the Marketing Performance of Banks in Gaza Governorates from the Point of View of Customers." *International Journal of Information Technology and Electrical Engineering* 6(6): 45-58.
- [8]Al-Hila, A. A., et al. (2017). "The Impact of Applying the Dimensions of IT Governance in Improving e-training-Case Study of the Ministry of Telecommunications and Information Technology in Gaza Governorates." *International Journal of Engineering and Information Systems (IJEAIS)* 1(7): 194-219.
- [9]Al-Jerjawi, Ziad (2010). *Methodological rules for constructing the questionnaire.* Second Edition. Palestine: Sons of Al-Jarrah Press.
- [10]Al-Karkhi, Majid (2014). *Results-based strategic planning.* Ministry of Culture, Arts and Heritage. Diameter.
- [11]Al-Karout, Najwa and Al-Tuwaijri, Saleh (2012). *The impact of health education on knowledge, attitudes and behavior in the community regarding solid waste management in Ghobeiry, Beirut.* *Eastern Mediterranean Health Journal*, 8(7).
- [12]Al-Shawara, Ali (2006). *Ecology is its system, its importance and its problems.* Ramallah: Jaffa Center for Publishing and Distribution.
- [13]ARIJ. (2015). *Status of the Environment in the State of Palestine.* Retrieved: 20 Feb, 2017, from: [http://www.arij.org/files/arijadmin/2016/SOER\\_2015\\_final.pdf](http://www.arij.org/files/arijadmin/2016/SOER_2015_final.pdf)
- [14]Arnaout, Muhammad Al-Sayed (1999). *Man and the Environment,* Cairo: The Egyptian Lebanese House.
- [15]Arqawi, S. M., et al. (2019). "The Policy of Functional Integration of the Product Planning Team as a Strategy for the Development of the Pharmaceutical Industry in Palestine." *International Journal of Academic Accounting, Finance & Management Research (IJAAFMR)* 3(1): 61-69.
- [16]Bani Shamsa, Rami (2012). *Evaluation of medical waste management in medical laboratories and occupational safety for workers in the Ramallah, Al-Bireh and Nablus area.* Institute of Water and Environmental Studies. Birzeit: Palestine.
- [17]El Talla, S. A., et al. (2018). "The Reality of Applying the Policy and Strategy Standard in the Palestinian Universities According to the International Quality Models." *International Journal of Engineering and Information Systems (IJEAIS)* 2(9): 1-9.
- [18]Ferdowsi, A., Ferdosi, M., Mehrani, Z., & Narenjkar, P. (2012). *Certain hospital waste management practices in Isfahan, Iran.* *International journal of preventive medicine*, 3(Suppl1), 85-176.
- [19]Gharaibah, Al-Farhan (1998) *Introduction to Environmental Sciences. I 2.* Dar Al-Shorouk for Publishing and Distribution, Amman, Jordan.
- [20]Ghoneim, Mazen (2010). *National strategy for solid waste management,* Palestinian National Authority.
- [21]GIZ. (2014). *Country report on the solid waste management.* Retrieved: 13 Jan, 2017, from: [https://issuu.com/the-palestine-development-monitor/docs/giz\\_country\\_report\\_on\\_the\\_solid\\_wa](https://issuu.com/the-palestine-development-monitor/docs/giz_country_report_on_the_solid_wa)
- [22]Global Engineering and Consulting Group, Ecoconserve. (2012). *Study and assessment of the environmental and social impact of the solid waste management project in Gaza Strip "Executive summary.* Gaza: Ecoconserve
- [23]Haidara, Al-Sheikh (2016). *Solid waste in Algerian legislation,* Algeria: University of Dr. Tahar Moulay.
- [24]Hamdan, Sabri Mohamed. (2012). *Municipal solid waste management in Gaza City: reality and ambition from the point of view of the population, an environmental study.* *Journal of the Islamic University of Human Research*, 20(1), 379-421.
- [25]Hoornweg, D., & Bhada, T, P. (2012). *What a waste: a global review of solid waste management.*

- [26]Joint Service Council for Solid Waste Management. .(2010). Overview Waste in Palestine. Retrieved: 15 Jan, 2017, from: <http://www.jscrab.ps/en/waste-overview/waste-in-palestine>.
- [27]Madani, Murad (2009). Solid waste legislation in reality and legislative needs. Palestine, Paper presented to the Second International Conference on the Palestinian Authority, An-Najah University.
- [28]Nie, L., Qiao, Z., & Wu, H. (2014). Medical Waste Management in China: A Case Study of Xinxiang. *Journal of Environmental Protection*, 5(10), 803.
- [29]Obeidat, Thouqan and Adas, Abdel-Rahman, and Abdel-Haq, Kayed (2001). *Scientific research - its concept, tools and methods*. Seventh Edition, Dar Al-Fikr for Publishing and Distribution, Amman.
- [30]Ozen, G., Yaman, M. & Acar, G. (2012). Determination of the employment status of graduates of recreation department. *The Online Journal of Recreation and Sport*. 1(2) 36-52.
- [31]Sabri, N. R., Hanyia, D. W., & Jaber, R. Y. (2013). Private partnership of solid waste management in the Palestinian municipalities. *palestine: Public and Municipal Finance (hybrid)*.
- [32]Shaheen, Haitham, Tayyub, Mahmoud and Ahmed, Safaa (2014). The role of environmental awareness in managing municipal solid waste: a field study in Lattakia Governorate. *Tishreen University Journal of Research and Scientific Studies - Economic and Legal Sciences Series*. 26(5).
- [33]Soufan, B. R. A. G. (2012). *Solid Waste Management in the West Bank: Institutional, Legal, Financial Assessment and Framework Development*. Nablus: An-Najah National University.
- [34]Sulaiman, Sanaa Muhammad (2011). *Data collection tools in psychological and educational research*. The world of books. Cairo Egypt.
- [35]Taher, Amani Uhaj Al-Amin, and Hassan, Nahid Abdel Rahim (2012). *Legal protection of coastal area pollution with solid waste in some environmental laws of the Red Sea State, Sudan*: Red Sea University, College of Marine Sciences and Fisheries.
- [36]The National Strategy for Solid Waste Management in Palestine (2010). Palestinian Authority.
- [37]This Week in Palestine. (2011). *Municipalities: Key Partners for Development*. This Week in Palestine. (159), 4.
- [38]Waste Collection : Performance, Capacity, and Regulation in Five Cities in Ghana