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URBAN SOLID WASTE MANAGEMENT FROM SOURCE TO DESTINATION (CASE STUDY: ASTARA CITY)

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ABSTRACT

Municipal waste management is a complex and multifaceted process that requires the serious determination of the responsible agencies and the cooperation of other sectors that are directly and indirectly involved in this matter. Astara is one of the northernmost cities of Iran and the westernmost city of Gilan province and with its unique environmental features, it needs a regular planning for waste management; Because it is adjacent to both the sea and the forest, and this factor, if not properly managed, will cause the fragility of these two environmental factors. In this research, using descriptive-analytical method, while analyzing the current situation of waste management in Astara city, using SWOT analytical model, the strengths and weaknesses, opportunities and threats of waste management in the city have been investigated; In this way, field methods, observation, questionnaires and interviews with experts have been used. The results of the research show that the weaknesses of waste management in the city of Astara outweigh the strengths and the opportunities against threats have not been used properly. Therefore, by identifying the strengths and weaknesses and opportunities and threats of waste management in the city of Astara, it is possible to overcome the existing problems and plan and plan waste management in the future horizons.

INTRODUCTION

Global population growth, urbanization, technology development, and economic activity, on the one hand, have led to the production of large amounts of waste and, on the other hand, have placed great pressure on the limited resources of materials and energy on earth. The needs of future generations for the resources and sustainability of the earth's ecosystem are among the new topics currently being discussed (Heidari, 2017: 2). Today, environmental protection is one of the most important pillars of human rights, and the protection and preservation of the environment is one of the main tasks of the present and the future. Because the environment as a limited phenomenon must be preserved not only for today's generation but also for

the survival of future generations. Considering the issue of environmental protection in development plans is one of the accepted topics to achieve sustainable development goals and can be available as a planning tool to planners, managers and decision makers based on which they can identify potential environmental impacts and options. Choose logically to eliminate or reduce them. Unfortunately, rapid population growth, industrial development, technological advances and the promotion of consumerist culture and as a result more waste production, are among the issues that have recently caused great economic and social crises in human societies (Afzali et al., 2016: 102) . Problems related to solid waste management are very complex due to many factors, such as quantity and quality of waste generated, rapid expansion of urban areas, financing problems, rapid technological advances, as well as energy and raw material constraints (Moh, Y. & Abd Manaf, 2017). Although developed countries have established laws and programs for waste disposal, underdeveloped countries still use simple methods such as waste disposal (Barkun et al, 2005: 848). Municipalities are usually responsible for waste management in cities, which often have problems beyond the ability of municipal officials to meet the challenges of municipal waste, mainly due to lack of organization, financial resources, complexity and multidimensionality of waste management and planning system. Therefore, considering that waste is an integral part of human life today, during the last two decades, the management of municipal solid waste has been one of the major concerns of city managers and also important issues. Global experience shows that burying every 10,000 tons of waste leads to employment for 2 people, while by recycling the same amount of waste, 9 people are employed (Zarghi and Rahmanizadeh, 2018: 1). In the context of these necessities, the most important reasons for the importance of waste management can be presented as follows:

1) Preservation of natural land resources 2) Prevention of environmental pollution 3) Adopting an integrated and comprehensive approach to reduce production waste or waste management in a sustainable environmental and economic way according to the natural world system or urban environments is also a necessity to pay attention to management Waste is 4) Planning and organizing the financial system of different stages of waste management is one of the most important necessities to pay attention to the waste management system (Shojaei, 2015: 14). The northern cities of the country are exposed to pollution and waste challenges due to high population density and high tourist attraction. The city of Astara is no exception to this rule and is ranked first in terms of passenger accommodation in Gilan province and between 20 It is one of the 30 most touristic cities in Iran, attracting six million domestic travelers and 800,000 foreign travelers annually. In addition, the port of Astara is the first private port in the country and the fifth active transit port in the north of the country. Astara is the most important strategic bridge between Iran and the Republic of Azerbaijan, despite the land, sea and railway borders, the gateway to the Caucasus, the golden gateway to Europe, the country's largest export in the field of luggage trade, the third active border in the field of exports and imports. , One of the oldest customs offices in the country with more than 200 years of experience, is the first export rank and the largest land customs in the north of the country, the second source of customs revenue in Gilan province and With this

approach, attention and study about urban waste in this city is of great importance and the present study intends to study waste management and planning in this border and strategic city and identify the weaknesses and capacities of waste management in it. Examine and analyze. Solid waste management includes a range of specific activities that must be combined in such a way that people, policymakers, decision makers, decision makers and managers are able to identify and understand the important relationships in the planning process. Astara is no exception to this rule. Due to its special geographical, climatic, tourist conditions, etc., it needs more and more special attention in the field of waste management. Finally, one of the main questions of the present study is: What are the problems of municipal waste management from origin to destination in Astara? What is the role of urban management in waste problems in Astara? Finally, the question will be answered: How can the waste challenges in the city of Astara be planned and managed?

BACKGROUND RESEARCH

Hazari and Sarai (2019) in an article have explained and evaluated the effective indicators on improving the efficiency of waste management system in Yazd. Sarai et al. (2016) in a study entitled *Prioritization of Urban Solid Waste Management Indicators for Sustainable Development (Case Study: Buchan City)* with the aim of evaluating urban solid waste management indicators for sustainable development using TOPSIS technique in Buchan , Has been compiled. Mohammadpour (2015) in the article Has studied urban waste management and sustainable development paths with urban planning. Hatami et al. (2016) in a study entitled "Study of waste segregation and separation in 22 districts of Tehran using spatial information system" using resident population statistics and waste generation and segregation, using spatial information system (GIS)), Has studied the amount of segregated waste during the years 89-92. Taghipour et al (2016) studied the impact of ICT on knowledge sharing obstacles in knowledge management process. Nasrollahi et al. (2016) in an article entitled "Comparison of environmental effects of different scenarios of processing and disposal of municipal solid waste using LCA method (Case study: Tehran)" to study, study and compare the environmental effects of three subsystems of waste processing and disposal such as Anaerobic digestion, isolated waste incineration and traditional burial. Abdoli et al. (2014) in a study have examined the waste management system in the coastal strip of Mazandaran province. (Arbulú, & Palmer, 2017) in their study entitled *the process of urban solid waste production and tourism growth; A STIRPAT model for Mallorca* By separating these two groups in the framework of IPAT-based models, they investigated the impact of tourist arrivals on the production of municipal solid waste in the city of Mallorca. (Guerrero et al., 2013) in an article on the challenges of waste management in cities of developing countries. (Kanat, 2010) Waste production showed that the country has made good plans to improve waste management and government support for municipal waste management has increased (Tadesse et al, 2008). Factors influencing household decision-making on waste disposal The results showed that the provision of waste facilities significantly affects the selection of waste, insufficient supply of waste containers and long distances to these containers

increase the likelihood of waste disposal in open areas and roads (Xiao and etal, 2007: 21) In an article entitled Production Process, Composition, and Management of Municipal Solid Waste in Beijing, correlation analysis showed that municipal solid waste in Beijing is steadily increasing, and food waste has been on the rise since 1990. Paper and plastic showed later It increased from 10% to 26% in 2003. (Kaseva et al, 2002) Urban Dar es Salaam in Tanzania showed that 21% of Dar es Salaam municipal waste is inorganic recyclable and 78% is organic (compostable).

MATERIALS AND RESEARCH METHODS

The method of this research is descriptive-analytical and is practical in terms of how it is used. In this research, after asking the research question, preliminary studies on the research topic are performed. The studied variables are in the form of a conceptual model and are as follows: a

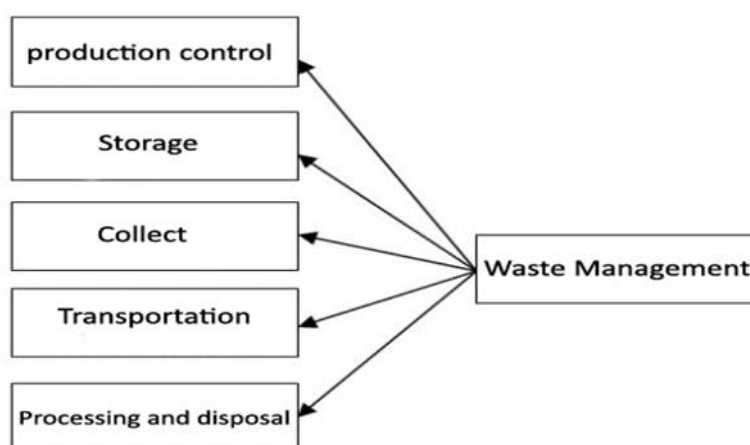


Figure 1- Research indicators (drawing: authors).

In order to collect information, two methods of library and field will be used. In the library method, by collecting written texts, books, articles and reports of relevant organizations, data will be collected and analyzed. In the field section, information will be collected from specialists, experts, managers and executive agents of waste management using field visits and questionnaires through the Delphi method. The statistical population of the research includes waste specialists and experts, managers and executives of waste management and experts of the Environmental Protection Organization. In this way, individuals are selected as a sample population using sampling methods.

RESEARCH SCOPE

Astara is a port city, on the west coast of the Caspian Sea (Caspian) and in the northernmost point of Gilan province and the last border point of Iran and the Republic of Azerbaijan and geographically in the center of the Great Talesh Azerbaijan) with a latitude of 38 degrees and 25 minutes and 25 seconds north and a longitude of 28 degrees and 52 minutes and 19 seconds east (Gholamrezaei, 2016: 47).

DISCUSSION AND RESEARCH FINDINGS

Current situation of waste management in Astara city
 Situation of waste production control in Astara city

The development of societies, consumerism, and the expansion of urbanization have led to an unbridled increase in waste production around the world, which, in addition to destroying the environment, has endangered the lives of millions of living things on the planet. The world's urban population is growing and the unlimited use of natural resources has multiplied the amount of waste produced; In this situation, paying attention to the methods of limiting waste production, especially at the household level, is one of the most important factors that will be the first step in the direction of waste management and improving the environmental situation. Avoiding waste generation or reduction at source is a wide range of options that can be achieved by limiting unnecessary consumption, proper design, recycling, and using products that produce less waste. کنترلThe stage of waste production control in Astara city has been analyzed using 6 items and using the opinion of experts, the results of which are as follows: In the first item, the amount of waste production sources identified in Astara city has been asked. According to him, the sources of waste production in the city of Astara have received a lot of attention. 53.3% of experts believe that waste generation sources have received a lot of attention. Also, 40% of experts, including 12 members of the statistical population, believe that the identification of sources of waste production has been done to some extent; Therefore, it can be concluded that some sources of waste generation have not been identified and considered. The second item, recognizing the factors affecting the production of municipal waste and determining the importance of each factor, allows decision makers to take the necessary measures. Socio-economic and climatic factors in each region can have a direct effect on waste generation. Scientific research shows that social factors such as: age, gender, marital status, household size, length of stay in the city, waste segregation have a direct effect on the per capita production of household waste (Payvastehgar and Ansari, 2017: 219). With age, per capita household waste production decreases, because the older you get, the more you become aware of the importance of reducing waste generation. Also, in the gender of women, the per capita production of household waste is higher and the reason is the specific consumerism of this group. In addition, in single individuals and families with lower household size, better economic situation, per capita amount of household waste production increases, the results according to experts 43 in a way that 43.3% believe that the factors affecting waste production in Astara to Some have been considered and also 20% believe that there is little attention to the factors affecting the production of waste. In the third item, one of the most important factors in attracting public participation is educational programs and raising the level of awareness in the field of waste management, which can be done in two forms: formal education in school, high school and university, and informal. Non-formal education can be provided both face to face and using educational technologies (posters, billboards, banners, etc.) and mass media (Abtahi et al., 2015: 8). Regarding the effect of public education on waste management, especially production control, in reducing the problems in the city of Astara shows that 14 people (46.7%) of 30 experts believe that بسیار greatly improves the control of waste production. In the fourth item, the performance of

various institutions such as municipalities, etc. was evaluated. The results of the expert opinion are such that 30% believe that the performance of various institutions in controlling waste production is high and the other 30% evaluate this performance to some extent. Also, 20% of experts, which includes 6 people from the statistical community, believe that the performance of various institutions in controlling waste production in the city of Astara is low. In the fifth item, the results of the study show that 66.7% of experts, which includes 20 people from the statistical population, believe that it greatly reduces waste production in the city of Astara, and 6.7% believe that very little Reduces waste production in the city of Astara. In the sixth item, the results of experts' opinion are such that 46.7% believe that the success of research on ways to reduce or control waste production has been high, and 20% believe that the success of research on ways to reduce or control waste has been low. Waste production is in the city of Astara.

Table - 1 Waste generation control situation in Astara City

Frequency					Item	Row
very little	Low	To some extent	Much	very much		
0	6/7	40	53/3	0	Identification of waste generation sources in Astara city	1
0	20	43/3	23/3	13/3	Investigating the effective factors on waste production in Astara city	2
0	0	13/3	40	46/7	Public education of people in the field of waste management	3
0	20	30	30	20	The performance of various institutions in controlling waste generation	4
6/7	0	0	26/7	66/7	The Impact of Laws and Regulations on Reducing Waste Production	5
0	0	20	46/7	33/3	Review the impact of research on ways of reducing waste	6

Source : Authors' Field Studies ,2019.

Waste storage situation in Astara city

Discussion of waste separation at source and recycling of valuable materials in municipal waste and their reuse in various aspects of health, environment, economy, employment, etc., and in almost all cities of Iran, the separation of recyclable materials informally by The private sector is common (Papli Yazdi and Vosoughi, 2004: 147). The first item asks about

the level of agreement with the incentive programs of the citizens, which shows that the incentive programs of the citizens in the city of Astara have been approved to a great extent. 60% of experts strongly agree with the citizens' incentive programs. Also, 20% of the experts, which includes 6 people from the statistical community, agreed with the incentive programs of the citizens to some extent. The second item asks about the level of agreement with citizens' punishment methods, such as: fines and duties. Most citizens who do not cooperate in any way with waste reduction and recycling programs, especially separation from the source, in Astara, the results show that 40% of experts Citizens largely agreed, and another 40% partially agreed with the plans. In the third item, the results of the survey show that 43.3% believe that waste storage of production resources in Astara city is somewhat in line with the principles of waste management, and another 43.3% believe that the compliance of waste storage with the principles of waste management is low. Therefore, it can be concluded that the principles of waste management in the city of Astara have not been considered. In the fourth item, the results according to experts according to Table 2 are such that 33.3% of experts believe that the share of citizens in reducing waste management problems with a focus on recycling is very high, also 13.3% of experts believe that the share of citizens Compared to the municipality, it reduces the problems of waste management with a focus on recycling. In the fifth item, the results show that 13 (43.3%) of the 30 experts believe that enforcing the law will greatly improve waste management. The sixth item is the results obtained by experts in such a way that 46.7% of experts believe that the hygienic principles of waste storage in the city of Astara are poorly observed. Also, 33.3% of experts believe that hygienic principles are observed to some extent in the waste storage of Astara city. In the seventh item, the results show that 40% of experts believe that the storage tanks for waste produced in Astara are small and do not meet the amount of waste generated. Also, 33.3% of experts, which includes 10 people from the statistical population, believe that waste storage tanks in terms of quantity and quality to some extent meet the amount of waste produced in the city of Astara.

Table 2 shows storage of waste in the city of Astara

Frequency					Item	Row
very little	Low	To some extent	Much	very much		
0	6/7	20	13/3	60	The approval of the program by encouraging citizens to cooperate separation	1
0	0	40	20	40	The approval of the application of punitive citizens in the co...	2
6/7	43/3	43/3	0	6/7	The adaptation storage of waste at the source of production in Astara	3

0	13/3	23/3	30	33/3	The share of citizens in comparison with municipalities in reducing the problems of management	4
0	20	36/7	43/3	0	The effect of enforcing laws and regulations on improving waste management in Astara	5
20	46/7	33/3	0	0	Observe the principles of hygienic storage of waste in the city of Astara	6
20	40	33/3	6/7	0	Investigation of waste storage tanks in terms of quantity and quality	7

Source : Authors' Field Studies 2019.

Waste collection situation in Astara city

In the first item, the opinion of experts regarding the time of waste collection in Astara city was examined. The results of these studies show that 13 people (43.3%) out of 30 experts believe that the time of waste collection in Astara city was somewhat appropriate. In the second item, the level of agreement with the transfer of waste management from origin to destination to the private sector is evaluated. The results of these studies are such that 50% of experts strongly agree with the transfer of waste management to the private sector. 36% of experts strongly agree with handing over waste management to the private sector. Also, 6.7% of these experts agree with the transfer of waste management to the "private sector" to a very small extent. In the third item, the results of the survey show that 14 people (46.7%) out of 30 experts believe that mechanized machines and modern technology are used to some extent in the waste collection of Astara city. In the fourth item, the results of the survey show that 20% of experts believe that the frequency of waste collection in the city of Astara was very appropriate. Also, 7% of experts, including 22 people from the statistical community, believe that the frequency of waste collection in the city of Astara was somewhat appropriate. In the fifth item, the results of the expert opinion are such that 36.7% of experts believe that Astara city management has been somewhat successful in the waste collection process, 16.7% of experts, which includes 5 members of the statistical community, believe that urban management Astara has been very successful in the waste collection process, and 20% of this statistical population also believe that the success rate of tuition management in the waste collection process has been small. In the sixth box, the results show that 17 people (56.7%) out of 30 experts believe that the number of recycling stations in Astara city is low.

Table 3 shows the collection of waste in the city of Astara

Frequency	Item	Row
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very little	Low	To some extent	Much	very much		
0	20	43.3	36.7	0	Study time is right for the collection of waste in the city of Astara	1
6.7	6.7	0	50	36.7	The approval of the transfer of the management of waste from origin maintenance to the destination to the private	2
6.7	46.7	46.7	0	0	The amount of using the car for mechanization and technology day in the collected waste Shhrastara	3
0	0	7	6.7	20	Check the frequency of the collection of waste in the city of Astara	4
20	26.7	36.7	16.7	0	The successfully manage a city of Astara in the process of the collection of waste in terms of the cost of the technology and...	5
16.7	56.7	26.7	0	0	Assessing the number of stations for recycling in the Shhrastara	6

Source : Authors' Field Studies , 2019

Waste transportation situation in Astara city

In the first item, the use of machines equipped with mechanized system in waste transportation in Astara city was questioned. The results obtained by experts in this regard are such that 53.3% of experts believe that in Astara city for transportation and Municipal waste transportation using machines equipped with mechanized system is used to some extent. Also, 6.7% of experts believe that machines equipped with mechanized system are rarely used for urban waste transportation in Astara. The second item analyzes and processes the structure of waste transportation in the city of Astara. The results of processing the opinion of experts show that 66.7% of experts believe that the waste transportation system in the city of Astara is somewhat appropriate. 33% of experts also believe that the waste transportation system in the city of Astara is slightly suitable. In the third item, the results according to the experts are such that 86.7% of the experts, which includes 26 people from the statistical population, believe that the

amount of equipment needed for waste transportation in the city of Astara is somewhat appropriate, also 6.7 % Of experts believe that the amount of equipment needed for waste transportation in the city of Astara is too small and not suitable.

Table .4 Status of transportation and transportation of waste in the city of Astara

Frequency					Item	Row
very little	Low	To some extent	Much	very much		
6/7	33/3	53/3	6/7	0	Review the use of machine tools equipped with the system of mechanized in...	1
0	33/3	66/7	0	0	Check the shipping and transportation of waste in Astara	2
6/7	6/7	86/7	0	0	Reviews of equipment necessary for the carrying and transportation of waste in the city of Astara	3

Source : Authors' Field Studies 2019.

Waste processing and disposal situation in Astara city

Waste management in Iran is seriously pursued only by municipalities and other institutions and executive bodies do not spend much time in this field. And this is in case the management and planning of waste requires national determination and cooperation of all governmental and non-governmental bodies.

Item number one evaluates the cooperation between the executive bodies for waste management in Astara city, which shows that 33.3% of the experts believe that the cooperation between the executive bodies for waste management in Astara city has been high, also 20 % Of experts believed that this cooperation was low, and 33.3% of experts believed that cooperation between executive bodies was very low. Item number 2 The results obtained by experts are such that 53.3% of experts believe that in the disposal and processing of waste in the city of Astara to some extent expert forces are used. Also, 40% of experts believe that specialized forces in waste disposal and processing in the city of Astara are rarely used. The third item according to experts The results show that 12 people (40%) out of 30 experts believe that unauthorized garbage is present in large numbers in waste disposal centers. The need to use modern methods of waste disposal indicates that landfilling in the ground, in addition to occupying a lot of space, causes air, water and soil pollution. It is hardly possible to recover and recycle the waste buried in these large landfills. It should be noted that unprincipled landfills are the biggest cause of global warming in the field of waste and are among the degraded areas on Earth. The fourth item has analyzed the use of new

disposal methods to dispose of municipal waste in the city of Astara, the results show that 53.3% of experts believe that the new methods of waste disposal in the city of Astara very little Has been; Also, 46.7% of experts believe that modern waste disposal methods have been underused in Astara; Therefore, it can be concluded that in Astara, new methods of waste disposal have not been considered at all.

Item number 5 of the results according to experts in this regard is such that 53.3% of experts believe that improper location of waste disposal in the city of Astara has caused a lot of environmental problems in this city, also 36.7% of experts believe There have been many environmental problems due to inappropriate location in the city of Astara, so it can be concluded that there is no proper and principled location for waste disposal in the city of Astara.

Table - 5 Status of waste processing and disposal in the city of Astara

Frequency					Item	Row
very little	Low	To some extent	Much	very much		
33/3	20	13/3	33/3	0	Assess cooperation between devices executive for management...	1
40	6/7	53/3	0	0	Review the use of force specializing in the processing and disposal	2
0	26/7	6/7	40	26/7	Check the trash pollen non -authorized in malls disposal	3
53/3	46/7	0	0	0	Review the use of the method of disposal of new waste...	4
0	0	10	36/7	53/3	Examine the problems arising from the positioning of improper disposal of waste	5

Source : Authors' Field Studies ,2019

Introducing Astara waste management strategies

In order to introduce the strengths and weaknesses of waste management in the city of Astara, field methods, interviews with experts and experts in waste management and the environment have been used. A total of 4 strengths, 7 weaknesses, 5 opportunities and 5 threats have been identified, which are shown in Table 6

Table -6 Astara waste management SWAT matrix

Neighborhood analysis to identify factors affecting waste generation	S ₁	Strengths
Provide some training for citizens in waste management	S ₂	

Assigning some waste management to the private sector	S ₃	
Use of mechanized machines	S ₄	
Lack of specialized personnel in the waste management body	W ₁	weak points
Non-observance of hygienic principles in order to store waste	W ₂	
Lack of full implementation of separation from the source	W ₃	
Lack of mechanized machinery and poor use of modern technology	W ₄	
Lack of complete identification of factors affecting waste generation	W ₅	
Shortages or lack of education of the public in the field of waste management	W ₆	
Lack of compliance bodies such as industry , departments of trade , manufacturing and services , training and education	W ₇	
Added value of recycled materials	About ₁	Opportunity to
High literacy rate of Astara citizens	O ₂	
Existence of waste management rules and regulations	About ₃	
There are rules and guidelines of the ecological environment and health	About ₄	
creating jobs	About ₅	
Immigration urban and rural population	T ₁	threats
Multiplicity of tourists in Astara region and mass production of garbage by them	T ₂	
Not using the method of disposal of waste and the creation of new threats friendly environment	T ₃	
The formation of the phenomenon of scavengers	T ₄	
Lack of coordination among the various management in the field of urban waste management	T ₅	

Source : Authors' Field Studies ,2019

It should be noted that the above analysis only clarifies the strategic position in a given period of time. Therefore, in order to follow the time trend, considering the fact that environmental conditions (internal and external) are dynamic and are constantly changing and changing, it is necessary to study the trend of developments and extract strategies at different times. . Following this trend helps to study and predict the various situations that may occur in the future. As mentioned in SWOT analysis, the factors affecting the system are divided into two categories: external or external factors and internal or internal factors. According to Table 6, it can be said that the SWOT model normally consists of a two-dimensional coordinate table, each of the four areas of which represents a set of strategies, in other words, four sets of strategies are always presented in this model, these strategies The

result of the two-by-two study of these columns will be together, so by examining Table 6, Table 7 will be obtained.

Table .7 Matrix Strategy for ST ,WO ,SO ,WT.

List weaknesses are)W(List the strengths of) S(internal factors Environmental factors
WO ₁ The potential of economic waste to attract skilled labor	SO ₁ Recycling of valuable wastes for economic gain	List of opportunities (O)
WO ₂ The potential of the high percentage of literacy of citizens for waste management	SO ₂ Pay special attention to the breakdown of the origin maintenance and recycling with a focus on education and culture of	
WO ₃ The potential legal and entry of more private sector investment in the field of	SO ₃ More and better use of the capacity of the private sector in the five stages of waste management	
WO ₄ Taking advantage of the rules and guidelines of the ecological environment and health in order to use the tools and technology	SO ₄ The use of new equipment for environmentally friendly and Environmental Health	
WO ₅ Create a task force to identify the agents of questions affecting waste production		
WT ₁ Program planning ,and culture of media using multiple public	ST ₁ Identify target immigrant communities to provide education for citizenship	
WT ₂ The potential of NGOs and institutions of the country	ST ₂ Increasing awareness and culture building among citizens	
WT ₃ Attract specialized personnel for waste management complex	ST ₃ Attract capital investment from the private sector to provide modern equipment and lessen the consequences of ecological environment	
WT ₄ Plan incentive for people to reduce waste production and separation in origin	ST ₄ Capacity utilization mechanized machinery for the engineering principles to reduce waste and the presence of tourists	

The sum of the weighted scores of Table 8 is less than 2.5, which indicates the superiority of the weaknesses over the strengths of waste management in the city of Astara.

Table -8 Matrix of internal factors of waste management in Astara city

Weighted points	Current status points	Weight	Internal strategic factors		
0/18	2	0/09	Analysis neighborhoods to identify the questions affecting waste production	S ₁	Strengths
0/20	2	0/10	Provide some training for citizens in waste management	S ₂	
0/27	3	0/09	Assigning some waste management to the private sector	S ₃	
0/18	2	0/09	Use of mechanized machines	S ₄	
0/18	2	0/09	Lack of specialized personnel in the waste management body	W ₁	weak points
0/9	1	0/09	Non-observance of hygienic principles in order to store waste	W ₂	
0/09	1	0/09	Lack of full implementation of the resolution of the origin	W ₃	
0/10	1	0/10	Lack of mechanized machinery and poor use of modern technology	W ₄	
0/18	2	0/09	Lack of full recognition of the questions	W ₅	

			affecting waste production		
0/18	2	0/09	Shortages or lack of education of the public in the field of waste management	W ₆	
0/8	1	0/08	Lack of compliance bodies such as industry , departments of trade , manufacturing and services , training and education , the media in general and...	W ₇	
2/45	-	1			Total

Source : Authors' Field Studies ,2019.

**Astara in waste the of the of fashion ,environment factors of Q of matrix
Table -9**

Weighted points	Current status points	Weight	External strategic factors		
0/18	2	0/09	Added value of recycled materials	About 1	Opportunity to
0/44	4	0/11	High literacy rate of Astara citizens	O 2	
0/27	3	0/09	Existence of waste management rules and regulations	About 3	
0/11	1	0/11	There are rules and guidelines of the ecological environment and health	About 4	
0/09	1	0/09	creating jobs	About 5	
0/33	3	0/11	Immigration urban and rural population	T 1	threats

0/12	1	0/12	Multiplicity of tourists in Astara region and mass production of garbage by them	T ₂	
0/10	1	0/10	No method of waste disposal and new...	T ₃	
0/08	1	0/08	The formation of the phenomenon of scavengers	T ₄	
0/20	2	0/10	Lack of coordination among the various management in the field of urban waste management	T ₅	
1/92	-	1			Total

Source : ,Authors' Field Studies2019

Opportunities are potential capacities that can be exploited to deal with threats. In the study of opportunities and threats of waste management, considering that the sum of weighted points is equal to 1.92 and its value is less than 2.5, so in the waste management of Astara city, the existing opportunities have not been used effectively.

CONCLUSSION AND SUGGESTIONS

Municipal waste management is a complex and multifaceted process that requires the serious determination of the responsible agencies and the cooperation of other sectors that are directly and indirectly involved in waste management. The city of Astara, as one of the northernmost cities in Iran with its own climate and unique environmental features, needs a regular planning for waste management; Because it is adjacent to both the sea and the forest, and this factor, if not properly managed, will cause the fragility of these two environmental factors. Findings from the study show that the city of Astara is facing problems in the field of waste management, the most important of which are:

1. Lack of accurate and comprehensive identification of waste production sources
2. Insufficient attention to the factors affecting waste production
3. Lack of citizenship education in terms of quantity and quality and scope of learning and diversity
4. Lack or adequacy of incentive and discount packages in order to encourage citizens separately from the source and recycling

5. Non-use of punitive weapons (fines and duties) for citizens, offices, organizations, industrial, production and commercial units, etc., which do not cooperate in any way with programs to reduce production and waste recycling.
6. Incomplete compliance of waste storage in production sources of Astara city with the principles of waste management
7. Lack of cooperation of citizens to reduce waste production
8. Lack of waste storage tanks
9. Lack of waste recycling stations
10. Non-observance of hygienic and environmental principles in waste storage
11. Low participation of the private sector in the five stages of waste management (from source to destination)
12. Using traditional methods and weak application of modern technology and mechanized equipment and machines in the five stages of waste management
13. High cost of waste collection
14. Existence of weaknesses in the structure of waste transportation, including lack of mechanized equipment and up-to-date equipment
15. Insufficient cooperation between executive bodies in waste management
16. Lack of specialized manpower in the waste management body of Astara city
17. Prevalence of unauthorized garbage collectors in landfills
18. Not using new disposal methods and improper location of waste disposal sites.

Also, the results of the research show that the weaknesses of waste management in the city of Astara prevail over the strengths and the existing opportunities against threats have not been used properly. Therefore, by identifying the strengths and weaknesses and opportunities and threats of waste management in the city of Astara, it is possible to overcome the existing problems and plan and plan waste management in the future horizons.

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