

## OPTIMIZATION OF MUNICIPAL SOLID WASTE MANAGEMENT SYSTEM

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### ABSTRACT

Management of solid waste is one of the most challenging environmental problems in Iran's cities and towns. Increasing population levels, rapid economic growth and rise in community living standards accelerate the rate of generation of solid waste in Iran cities. This study aimed to develop a method of analysis of municipal solid waste management (MSWM) in cities, and the consolidation of the method was taken as case study the issue in the municipality of Iranshahr, in central region of Baluchestan (Iran). The SWOT analysis was performed to formulate strategic action plans for MSWM in order to mobilize and utilize the community resources on the one hand and municipal corporation's resources on the other. The methodology used was based on research relevant literature, and through field interviews with the stakeholders (including government department staff responsible for MSWM and managers and engineers involved in projects and MSWM activities in the region). The main results show that the SWOT analysis was an excellent tool to explore the possibilities and ways for initiating and successfully implementing the MSWM program and by this model, strategic action plans were developed for municipal organization to improve MSWM in Iranshahr.

**Keywords:** Strategy, Municipal Solid Waste, SWOT Analysis, Optimization, Iran

### INTRODUCTION

Integrated municipal solid waste management (MSWM) can be defined as the selection and application of suitable techniques, technologies and management programs to achieve waste management objectives and goals (Tchobanoglous *et al.*, 1993). Currently, 1.3 billion metric tons of municipal solid waste (MSW) are generated annually in the world, and this amount is expected to rise to about 2.2 billion tons by 2025 (Hoorweg and Bhada-Tata, 2012), MSW generation is influenced by economic conditions, living standards, urbanization, and population (Liu & Wu, 2011; Saeed *et al.*, 2009; Chiemchaisri *et al.*, 2007). Dramatic increases in population in urban areas are typical phenomena in Africa and Asia, and the amount of MSW generated dramatically increases as a consequence. Historical data compilation of MSW generation per capita, a core indicator of environmental pressure to evaluate the intensity of MSW generation, can contribute to better MSW management planning (Kawai & Tasaki, 2015).

MSW is an essential by-product of everyday living. Thus, the idea of eliminating solid waste is an impractical proposition; what is realistic is the management of solid waste in an effective manner, which is scientifically approved and needed for sustainable urbanization and development. Effective and scientific MSWM, including prevention and reduction of waste, is necessary for sustainable urbanization and development (Srivastava *et al.*, 2005). MSWM is a major challenge in urban areas throughout the world, with greater effects felt in the rapidly growing cities and towns of developing countries (Seik, 1997). Also it's considered a public service, providing citizens with a system of disposing of their waste in an environmentally sound and economically feasible way. The amount and composition of waste generated comprise the basic information needed for the planning, operation and optimization of waste management systems (Beigl *et al.*, 2008). As urbanization and industrialization continue to take place, the management of solid waste has become a major environmental and public health problem in urban areas. These concerns are caused by technical, financial, institutional, economic, and social factors which constrain the development of effective solid waste management systems (Turan *et al.*, 2009). MSWM is going through a critical phase, due to the unavailability of suitable facilities to treat and dispose of the

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larger amount of MSW generated daily in metropolitan cities. Unscientific disposal causes an adverse impact on all components of the environment and human health (Sharholy *et al.*, 2008). The annual waste generation has reported to increase in proportion of rise in population and urbanization. Issues related to disposal have become challenging as more land is needed for the ultimate disposal of these solid wastes (Idris *et al.*, 2004). MSWM policies in developing countries generally first focus on the timely removal of wastes from densely populated areas to maintain hygiene and health (Kawai & Tasaki, 2015). While, the waste pose serious hazard to human health and environment if improperly stored, treated, transported, disposed of or managed (Misra & Pandey, 2007). If the population and resources are not accompanied by the development of innovative approaches for availing enhanced community participation and government support for environmental management, it may lead to deterioration of environmental quality and social conflicts (Srivastava *et al.*, 2005). This approach would promote effective strategies for conflict resolution in participatory environmental management (Furedy, 1991). It is becoming increasingly evident that a waste management program that ignores the social aspect is doomed to failure. The problems of public participation in planning and implementation are no less important than the technical or economic aspects in waste management and decision-making (Joos *et al.*, 1999).

MSWM in a city is managed by Urban Environment Company (URENCO) which has responsibility to collect, transport and treat the solid waste generated from residential areas, streets, commercial areas, offices, markets, industrial parks, hospitals, etc. Besides, private companies, recycling companies also participate in some cities for MSW management activities. MSW generation from various sources in municipal area is temporarily stored at convenient locations. Next, this is collected, transferred and transported to intermediate treatment facilities and final disposal site (Thanh & Matsui, 2011).

In recent years the MSW is one of the most important environmental issues for all regions of Iran and is one of the major problems for municipalities so that, imposes significant costs on the urban management. The production amount of MSW in urban areas of Iran is 10370798 tons per year and the per capita amount of MSW production for every person is averagely 0.64 kilogram per day (Hassanvand *et al.*, 2008). The related studies to MSWM in Iran has showed that the collecting, waste disposal, recycling and basically MSWM have dramatic difference with other countries in world due to the type and quality of wastes (Abduli and Jalilighazizadeh, 2007; Mortezaei, 2011) and the characteristics of MSW in Iran is close to the MSW characteristics of low-income countries (Hassanvand *et al.*, 2008). The physical analysis and studying the components of municipal waste in Iran has showed that in the composition of the waste addition of organic materials there are materials such as recyclable materials and materials which are convertible to energy and reusable materials like: paper, cardboard, plastic, glass, metal and etc, so that, 70% of produced wastes are "wet" and 30% of them are "dry" (Ebrahimi, 2012).

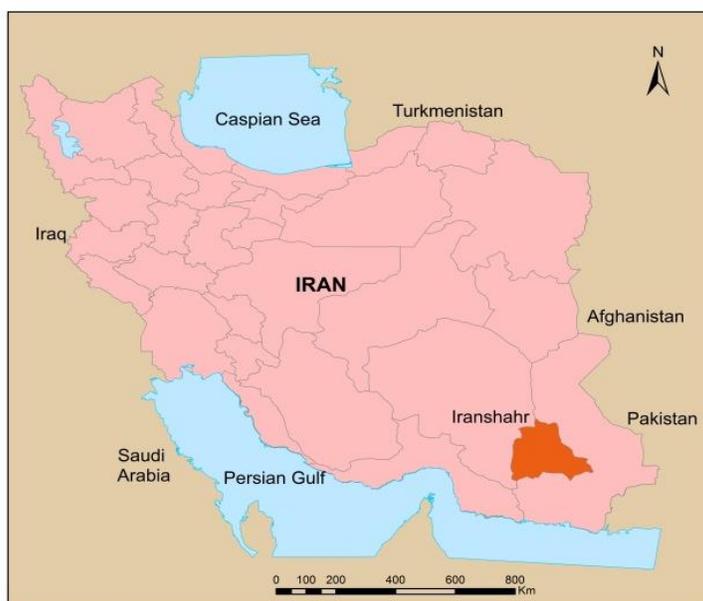
The separation of municipal waste in Iran informally is done by Badger and sometimes done by municipal workers and in most cities there are recycling industry in unsanitary and primary level. Waste management process in most cities of Iran is done by this way which these materials after production and storage, will collect and mainly transferred to landfills. According to mentioned items in total it can said that in a few cities of Iran the municipal waste system is active and is completely managed and status of the waste executive management in other cities is not organized (Ebrahimi, 2012). In Iran the waste buried in the ground or mostly in nature, in areas close to cities, stored and then burned. All these methods are dangerous for the environment and causing to soil erosion, air pollution, uglify the nature and the natural environment for wildlife would be inappropriate (Kosarirad *et al.*, 2012). Overall, 83.6% of produced total municipal solid wastes in Iran are transferred to the landfills and 10.5% are converted into compost and 5.9% are recycled (Hassanvand *et al.*, 2008). In Iran the Municipalities Organization have direct responsibility of solid waste management, and hierarchy of solid waste management in most cities of Iran is as follows: the in-charge municipal services works as a subset of the mayor of each area, and its main task is providing needed services of each city such as collecting, transporting and disposal of waste (Alavimogadam *et al.*, 2009).

Fortunately, in recent years different organizations have been established for optimizing the MSWM in Iran such as: conversion of materials municipality and recycling organization. In this regard, several

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projects have been defined in various cities and have been implemented which unfortunately many of them was not success.

Iranshahr city is in south-east Iran situated between 27°12'0" N latitude and 62°40'0" E longitude (see Figure 1) and having a unique blend of heritage and culture. Due to improper solid waste disposal and management, there is an urgent need to initiate a well-planned integrated MSWM approach with the community's participation in the city. Per Census 2006, this city has a total population of about 265000, which generates 140 tons of municipal waste per day (Report of Iranshahr municipality, 2008). While the quantity of solid waste generated by society is increasing, the composition of waste is becoming more and more diversified, with increasing use of packaging materials made of both paper and plastic. In a survey conducted by the author, it was observed that rapid expanding of urbanization, population growth, lack of budget and credits for doing Waste management programs, lack of motivation and skill of municipal staff, public apathy and lack of the human resources development activities and etc. are the main limiting factors that have been prevent the proper MSWM in Iranshahr. The present study focused on ways of community participation in MSWM services and, in particular, how such participation by community and government sectors (especially the municipal) can be increased.



**Figure 1: Geographical location of Iranshahr city in Iran**

Therefore, there is a need to work towards a sustainable waste management system, which requires environmental, institutional, financial, economic and social sustainability.

A SWOT (Strength, Weakness, Opportunity and Threat) analysis approach is employed to achieve the purpose. Every program, project, development and management plan has its strengths and weaknesses, opportunities and threats. Considering these strengths, weaknesses, opportunities and threats, a project coordinator can deal more effectively with the problems that are likely to come up, and look at ways and means of converting the threats into opportunities, and off-setting the weaknesses against the strengths. This analysis could be under taken for any idea, organization, person, product, program or project (Johnson *et al.*, 1989).

SWOT analysis was popularized by Andrews (1987). It is an important support tool for decision-making, and is commonly used as a means to systematically analyze an organization's internal and external environments (Kangas *et al.*, 2003; Kotler, 1988; Kurttila *et al.*, 2000; Stewart *et al.*, 2002; Wheelen & Hunger, 1995; Yuksel & Dagdeviren, 2007). The further utilization of SWOT is usually based on qualitative and quantitative analysis of internal and external factors, as well as on the capabilities and

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expertise of the people involved in the planning process (Anselin *et al.*, 1989; Kurttila *et al.*, 2000). SWOT analysis is used to develop four types of strategies, namely SO (strengths-opportunities) strategies, WO (weaknesses-opportunities) strategies, ST (strengths-threats) strategies, and WT (weaknesses-threats) strategies (Babaesmailli *et al.*, 2012; Sevkli *et al.*, 2012). SO strategies use a firm's internal strengths to take advantage of external opportunities. WO strategies overcome internal weaknesses by capitalizing on external opportunities. ST strategies use a firm's strengths to avoid or reduce the impact of external threats. WT strategies are defensive tactics directed at reducing internal weaknesses and avoiding environmental threats (Wehrich, 1982). According to this model, an appropriate strategy maximizes the strengths and opportunities and minimizes the weaknesses and threats (Nikolaou & Evangelinos, 2010). The strengths and weaknesses are identified by an internal environment appraisal while the opportunities and threats are identified by an external environment appraisal (Dyson, 2004; Chang & Huang, 2006; Markovska *et al.*, 2009). SWOT analysis summarizes the most important internal and external factors that may affect the organization's future, which are referred to as strategic factors (Kangas *et al.*, 2003). The external and internal environments consist of variables which are outside and inside the organization, respectively. The organization's management has no short-term effect on either type of variable (Houben *et al.*, 1999). A SWOT analysis needs to be flexible. Situations change with the time and an updated analysis should be made frequently. Further, we may conclude that SWOT is neither cumbersome nor time-consuming but is effective because of its simplicity (Schmoldt *et al.*, 1994).

SWOT analysis is used in different sectors and planning and development situations as a tool for organizing and interpreting information, including technology development (Ghazinoory *et al.*, 2009; Ming *et al.*, 2014), environmental impact assessment (Nikolaou & Evangelinos, 2010; Paliwal, 2006; Rachid & El Fadel, 2013), tourism management (Kajanus *et al.*, 2004; Reihaniana, 2012; Zhang, 2012; Scolozzia *et al.*, 2014) and Waste management (Srivastava *et al.*, 2005; Halla, 2007; Yuan, 2013), for example, in the discipline of waste management, an investigation on formulating strategic action plans for municipal solid waste management in Lucknow was performed; the study adopted a research method of integrating stakeholder analysis into SWOT analysis and presented a set of concrete strategic action plans for both the community and municipal corporation to improve solid waste management in that region (Srivastava *et al.*, 2005). It is evidently demonstrated by those studies that the SWOT analysis approach is a better tool for investigating problems from a strategic perspective. Thus it is adopted in the present study to strategically analyze MSWM in Iranshahr. In other words, this Study was performed to develop a strategic action plan of MSWM based SWOT analysis with a view to make the Iranshahr city cleaner and greener. It aimed at identifying the positive and negative factors, as well as internal and external factors, that might have an impact on the proposed MSWM program. SWOT analysis of this program and its components (Community and Municipal) was intended to maximize both strengths and opportunities, minimize the external threats, and transform the identified weaknesses into strengths and to take advantage of opportunities along with minimizing both internal weaknesses and external threats.

## **MATERIALS AND METHODS**

The research methodology used consists mainly of four parts (Yuan, 2013), which is shown in Figure 2. In the first part, for the purpose of answering the following research question: What are the internal and external factors affecting the effectiveness of the situation of MSWM in Iranshahr and what actions should the Municipality take to comply with the legislative framework on integrated MSWM?; An overview of the latest status quo of MSWM in Iranshahr Municipality was performed, the data obtained from a thorough search based on a literature review of journal articles and academic publications, government documents (official and unpublished material), MSWM related the current regulations and studies at the national level such as the Constitution of the Islamic Republic of Iran, Waste Management regulation and municipal ordinances and official documents collected from the visits carried out during the research to the public and private institutions and interviews the municipal staff that are responsible for MSW planning and management. Nevertheless, the collection of primary data included interviews, electronic correspondence, and direct observation of the Iranshahr Municipality.

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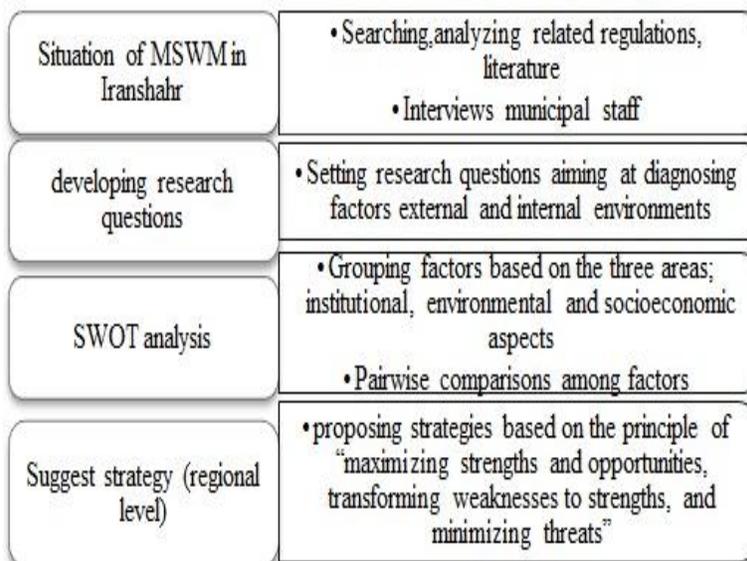
Next, a group of research questions are formulated aiming at diagnosing the strengths, weaknesses, opportunities and threats of MSWM in Iranshahr. Identification of relevant factors of the external and internal environments (namely strengths, weaknesses, opportunities and threat) by a baseline survey using an semi-structure questionnaire (Table 1) and interviews with the stakeholders (including municipal staff responsible for MSWM and managers and engineers involved in projects and MSWM activities in the region), and thus they are knowledgeable about the MSWM practices in Iranshahr. In SWOT analysis, multiple perspectives are always needed (Heinonen, 1997). In the third part, a detailed SWOT analysis is performed based on the research questions. Answers to those questions are extracted through analyzing information obtained from viewpoints major stakeholders concerned. The data was grouped according to three action areas; institutional aspects, environmental aspects and socioeconomic aspects. Pair wise comparisons among factors were conducted within every SWOT group. When making the comparisons, the questions at stake were: (i) which of the two factors compared was greater, and (ii) how much greater? With these comparisons as the input, the relative local priorities of the factors were computed using SWOT analysis (Srivastava *et al.*, 2005).

In section four based on the SWOT model identified, strategies for improving the MSWM situation in Iranshahr are presented in line the principle of “maximizing strengths and opportunities, transforming weaknesses to strengths, and minimizing threats”.

**Table 1: Research questions for SWOT analysis**

<b>Factors</b>	<b>Questions</b>
<b>Strengths</b>	<ul style="list-style-type: none"> <li>◦ What are the advantages?</li> <li>◦ What can MSWM do as well?</li> <li>◦ What are the factors supporting MSWM?</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>◦ What obstacles prevent the promotion of MSWM?</li> <li>◦ Which elements as to MSWM need to be strengthened?</li> <li>◦ What could be improved?</li> <li>◦ What is not done properly?</li> <li>◦ What should be avoided?</li> <li>◦ Where are the complaints coming from?</li> </ul>
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>◦ Where are the good chances facing MSWM?</li> <li>◦ What are the interesting trends?</li> <li>◦ What benefits would occur to facilitate an improved MSWM?</li> <li>◦ What changes in usual practices and available technology on both a broad and narrow scale may occur?</li> <li>◦ What changes in Government Policy related to MSWM may be possible?</li> <li>◦ What changes in socio-economic patterns, MSWM practices, life-style and economic standards of project beneficiaries may occur?</li> </ul>
<b>Threats</b>	<ul style="list-style-type: none"> <li>◦ What obstacles do MSWM face?</li> <li>◦ Are the required support and necessary facilities for an improved MSWM situation available?</li> <li>◦ Is the changing technology threatening MSWM?</li> <li>◦ Do the stakeholders show their interest and willingness for supporting MSWM?</li> </ul>

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**Figure 2: Research methodology (Rosell, 2011; Yuan, 2013)**

**RESULTS AND DISCUSSION**

**Table 2: Results Institutional aspects SWOT profile**

<b>Internal conditions</b>	<b>External conditions</b>
<b>Strengths</b>	<b>Opportunities</b>
Strong awareness the Municipality about promoting MSWM	Possibility of using technological advances in order to collecting waste
Creating waste management organization in structure of the municipality	Authorities Belief to education the community in MSWM
Having educational programs about recyclable wastes in selected areas	
<b>Weaknesses</b>	<b>Threats</b>
Shortage of experts and low levels of manpower productivity	Lack of coordination of organizations involved in MSWM
Lack of enjoyment and use of technology and facilities for the transmission, processing and disposal of waste	Lack of executive instructions about activities related to MSWM
Lack of comprehensive information bank for MSWM	Sprawl decision centers in MSWM
Lack of research and development part in municipality	policy gaps that need to be addressed (e.g. to desist people from throwing garbage in public areas)
Lack of integrated approach and proper scientific system for MSWM	
Lack of waste separation at source of its generation, viz. household segregation	
Mismanagement and lack of consistency in the management	
lack of motivation and skill of municipal staff	

**SWOT Analysis of MSWM in Iranshahr**

For the purpose of this research, the data gathered in regards to the current MSWM in Iranshahr was classified using three different criteria as action areas; (Institutional aspects, environmental aspects,

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socioeconomic aspects) within each SWOT group, (strengths, weaknesses, opportunities and threats) to create a list of determinant characteristics to define each SWOT element. The criteria elements are the following (Rosell, 2011): Institutional aspects (IA): this element of the criteria assembled the information about internal aspects and external factors of Iranshahr Municipality concerning the following organizational aspects areas: including institutional capacity, financial, administrative and operational effectiveness, legislative compliance, and internal/external communications. Environmental aspects (EA): this component gathered information related to how the internal aspects and external factors have caused or could produce environmental impacts (positive and negative) within the urban areas of the municipality, as well as at the final disposition site. Socioeconomic aspects (SEA): this section of the criteria was elaborated to accumulate information about internal characteristics (strengths and weaknesses) of the social and economic aspects related to the Iranshahr Municipality MSWM. Likewise, this criterion also gathers the information about the external factors (opportunities and threats) associated to the socioeconomic aspects that could influence Iranshahr Municipality. After the information was assigned and clustered into each of the criterion for the creation of each SWOT group, a SWOT profile was built based on internal characteristics and external factors for each of the aspects (Institutional, environmental and socioeconomic), as illustrated in Tables 2, 3 and 4.

**Table 3: Results Environmental aspects SWOT profile**

<b>Internal conditions</b>	<b>External conditions</b>
<b>Strengths</b>	<b>Opportunities</b>
Environmental studies for the proposed new landfill	Environmental rules and laws Nongovernmental organizations (NGO) Environmental
<b>Weaknesses</b>	<b>Threats</b>
Inappropriate landfill Disposal of household waste with hospital waste	Informal recycling by Badger Animals such as cats and stray dogs in city which causes tear the waste plastics and spread them Low level of community's awareness about environmental issues

**Table 4: Results Socioeconomic aspects SWOT profile**

<b>Internal conditions</b>	<b>External conditions</b>
<b>Strengths</b>	<b>Opportunities</b>
Quality and type of waste generated (organic waste and residues)	Industries and markets for recyclable materials  Creating employment opportunities and increasing the level of employment Media advertisement for separating and reducing waste and obeying timing plans for waste exit Willingness of private sector to participation and investment Youths are the energetic, enthusiastic and productive human resources in the community for good MSWM through active community participation
<b>Weaknesses</b>	<b>Threats</b>
Municipal limits in resources and funding for doing MSWM program Lack of citizens awareness on how to separate waste and their economic value Lack of financial resources and systematic planning for the possibility of waste recycling Lack of information, education and communication (IEC) resource materials for human resource development (awareness and training) of sanitary workers and community people	Economic crisis in the region  Public apathy and community's non-willingness to cooperate and participate Exorbitant expenses to create the proper culture of producing and separating waste Increasing the amount of waste because of changing consumption patterns and advertising for products

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#### ***List of Strategic Actions in Accordance to Institutional Aspects from the SWOT***

- SA<sub>1</sub>) Preparation and implementation of schemes separation of origin of recyclable materials
- SA<sub>2</sub>) Use of new technologies and methods for the MSWM including construction of a transfer station and save on transportation costs and mechanize entire waste collection system
- SA<sub>3</sub>) Regulation applicable laws in order to optimize and MSWM
- SA<sub>4</sub>) Oversee the collection and disposal of hospital waste and execute a separate plan for the collection and disposal of infectious waste and contaminated
- SA<sub>5</sub>) Establishing a mechanism for determining the responsibility of various departments involved in MSWM
- SA<sub>6</sub>) Incumbency reduction and gradual transfer of collection and transport to the private sector
- SA<sub>7</sub>) Awareness promotion and authorities information by holding Specialized training courses of collection and transportation for municipal staff
- SA<sub>8</sub>) Creation research part and the development of research projects on various aspects of MSWM and More communication with academic and research centers
- SA<sub>9</sub>) Accelerate the development and implementation of source separation programs along with implementation of educational programs based on a regular planning and scheduling and covering the entire city by this program in a reasonable timeframe
- SA<sub>10</sub>) Formation a research and Scientific Committee in the review solid waste recycling in terms of economic and environmental
- SA<sub>11</sub>) Strengthening mutual consensus through public workshops and hearings to solve social problems in the community along with environmental problems for proper MSWM and also the potential economic value of waste generated
- SA<sub>12</sub>) Design of academic curricula in primary, secondary and higher education promoting selective sorting of waste
- SA<sub>13</sub>) Organizing informal groups separation and recycling of waste materials through the formation of cooperatives collecting and selling recyclables
- SA<sub>14</sub>) Creating a comprehensive database of waste management for responding to the long-term and short-term issues of waste management
- SA<sub>15</sub>) Implementation a comprehensive and integrated waste management system in urban set and reducing of parallel activities in order to increase efficiency and reducing the cost of waste management systems

#### ***List of Strategic Actions in Accordance to Environmental Aspects from the SWOT***

- SA<sub>1</sub>) Improving environmental monitoring system by training and capacity development activities for the entities responsible
- SA<sub>2</sub>) Use of appropriate methods to reduce pollutants derived from landfills
- SA<sub>3</sub>) Impart environmental education (EE) to the community and to resolve how it can be more effective in increasing community participation in MSWM through awareness raising and training activities using EE-based information, education and communication (IEC) materials
- SA<sub>4</sub>) Implementing environmental education for each level of education system
- SA<sub>5</sub>) Improvement of the monitoring and evaluation in execution of the plans for MSWM by the environmental authorities with the aim of achieving sustainable development
- SA<sub>6</sub>) Use of experts with environmental and sanitary perspectives in MSWM

#### ***List of Strategic Actions in Accordance to Socioeconomic Aspects from the SWOT***

- SA<sub>1</sub>) Encourage citizens to source separation recyclable materials through NGO programs in advance to goals and plans MSWM
- SA<sub>2</sub>) Community participation should be accompanied by human resource development, which means that human resource development, is needed for a high degree of participation and involvement by developing awareness and skills among the community for proper MSWM
- SA<sub>3</sub>) Strengthening the role of youths, housewives and senior citizens in participate in MSWM

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SA<sub>4</sub>) Encouraging community based initiatives (preferably involvement of youths) and strengthening self-reliance and mutual self-help which can enhance a community's potential to participate in MSWM

SA<sub>5</sub>) Provision by government of financial resources and simultaneously by the community of human resources for MSWM to support organizations for community-based MSWM initiatives

SA<sub>6</sub>) Raising awareness and changing attitudes of citizens towards the proper MSWM

SA<sub>7</sub>) Promotion of sustainable consumption at the household level

SA<sub>8</sub>) Create economic incentives for the existing recycling companies and subsidies the creation of new recycling businesses

SA<sub>9</sub>) Search reliable and stable financial resources to cover the costs of waste management including action to take the waste management costs of manufacturers in accordance with existing guidelines and regulations

SA<sub>10</sub>) Changing consumption patterns in society through education and culture by taking advantage of media advertising

Nowadays cities are seen as motors for the sustainable development. The rapid development of cities and industries, immethodical use of sources and changes in consumption patterns leads to the creation of huge crises which has put environment and human health, particularly urbanites at risk. In the meantime to address the urgent environmental issues in the cities including MSWM aspects, there is a need to work towards a sustainable waste management system, which requires environmental, institutional, economic and social sustainability. Performance of such systems depends on the meaningful participation of individuals, communities and institutions, producers, NGOs and governments. In this research, SWOT analysis was applied by judging it on three aspects Institutional, environmental and socioeconomic in order to optimization of MSWM system and it was observed that the SWOT analysis was an excellent tool to explore the possibilities and ways for initiating and successfully implementing the MSWM program.

Finally, to achieve optimal waste management based on the results, the following suggestions are offered:

- For the purpose of further research concerning the MSWM in Iranshahr, detailed institutional analysis and diagnosis of the synergies among the stakeholders involved in the existing system recommended.
- Also, assess the different phases of MSW in order to improve the management within each of the organization from the technical and operational performance.
- Creating a part of searching and more relation of municipality with university centers
- Providing clear guidelines and regulations for the use of the private sector in all parts of the waste management and providing the decision for private sector investment to encourage in part of waste management
- Doing waste learning plans by municipality via face to face and public education via Medias

It will certainly serve as a foundation for feasibility and sustainability of Municipal Solid Waste Management program for Iranshahr city through community participation.

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