

Waste Management Challenges and Strategies in the City Of Qom

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ABSTRACT

Recycling and planning of waste management is one of the strategic objectives of metropolitan areas in the field of biomedical management, which is important due to environmental issues and financial constraints of the municipalities and therefore the preparation of coherent recycling programs from the source and promotion of public awareness in Leading countries in developed countries have laid down coherent and clear rules on the management and management of wastes to ensure the effectiveness and effectiveness of waste management processes and practices. Based on this, the prevention of waste production and the reuse of urban waste (recycling) are considered essential to reduce waste management challenges and challenges. considering that the management of urban waste is one of the main issues and challenges for urban management , especially metropolitan, this paper tries to investigate and use theoretical foundations to the challenges of waste management in a case in Qom and suggestions and appropriate strategies are presented.

Introduction

In the twenty - year perspective , the fiftieth principle of constitutional law focuses on the importance of environmental issue, and waste management as one of the most essential axes of sustainable development in our country. In principle , the 50th anniversary of the Islamic Republic of Iran is considered a general duty to protect the environment that the generation of today and generations must grow in that social life. It is therefore forbidden that economic and non - economic activities that tackle the pollution of the environment or the irreparable destruction of it. This principle is somehow tied to the concept of sustainable development and refers to the capacity of tolerance (any pollution and destruction that is over capacity of the ecosystem) and environmental protection. This principle is referred to as the human environment , and the natural environment. Since recycling is a kind of return on investment, it is clear that the separation of waste and its collection and return to the natural cycle will have an effective role in the city economy, and even in some cases, recycling and preparation of materials will have a positive impact on the economic process Country. At present, environmental pollution is due to inappropriate landfill of industrial waste as well as unauthorized harvesting of forests and pastures in developing countries more than industrialized countries. With regard to countless environmental pollution, any investment to clean the environment will lead to a reduction in health and medical costs, and thus these investments are short and long term economic returns. According to economic experts, the establishment of a culture in society requires transparent information and encouragement measures at the early stages of the work. Therefore, it is unavoidable to bear the costs of collecting at the beginning of the work until the conversion of the culture of division and its

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prevalence. Official statistics published in Iran reflect the fact that more than 80% of urban waste is buried and a small percentage of these materials are recycled and reused.

They go Today, changes in the pattern of consumption in terms of optimal use and less waste production have been taken into account. The prevention of waste generation and the reuse of urban waste or recycling of resources are considered essential to reduce waste management challenges and challenges, especially solid waste. As time passes gradually decreases the reserves, so from an economic point of view, it is important to consider acceptable systems for long-term sustainability in order to compensate for the current costs of development in the use of human resources from endemic and non-renewable natural resources. Waste management and recycling play an important role in industrial production, as many daily consumables can be produced through municipal solid waste. Reducing urban wastes in addition to saving economies and eliminating the costs of separation and separation of wastes is also a guarantee of employment creation and income generation. On the other hand, reducing waste can improve investment in raw materials, office supplies and other purchases. Therefore, creating a clean and clean environment for citizens requires a collection and disposal system for solid waste management in cities to improve the collection and recycling of waste. According to waste management law, urban managers should use methods to minimize unrecovered waste and prevent unwanted waste and returning capital to the national economy, helping to preserve the environment, helping the community economy, creating employment Participation of citizens and the private sector. The daily production of 740 tons of waste in Qom requires a consistent timetable for waste management, which the Qom waste management organization has been working on in recent years and needs ongoing activities and the use of new ways of waste recycling and management. Is a city. Therefore, in this paper we will consider the actions taken in the municipality of Qom in the field of waste management and the problems of projects and proposals on this issue.

The Concept of Recycling and Waste Management

All the materials that the consumers are throwing away can be retrieved. In practice, there is a difference between the quantity and quality of these materials. Materials that are unsuitable for recovery and return are materials that make their constituent elements very different and inferior. Therefore, the management of solid waste by possessing certain objectives about a certain amount of waste that must be retrieved and delivered to other methods of disposal will be able to provide a certain system of application and reuse of these materials. According to the volume of waste, their recycling rates are also different in any country in terms of economic policy and economic status and the need for resources (Herbert & Lund, 2001). Today , with the scientific and modern methods of recycling, we can help the economies of cities in addition to restoring and assisting the environment, but the fact is not yet fully understood in our country. Reducing the quality and quality of goods and products, increasing population and diversity of goods, increasing demand for consumption and consumption has contributed to an increase in domestic and industrial waste. The breakdown scheme can be avoided by a major portion of national wealth and resources. in this way , the volume of urban waste by separation of trash decreases greatly. Based on the definition of the Organization for Economic Co - operation and Development (OECD) , waste is the " inevitable material from human activities, which is currently not needed in the near future, and processing or disposal is essential." The United Nations Environment Program (UNEP) defines waste as: objects that do not want them, do not need them, do not use them and require processing or disposal. Recycling is a solution that is cost - effective in terms of cost. Because it imposes less costs on the city than the landfill or incineration, saving energy and the environment is cleaner than the original goals of recycling. given the increasing population growth and the growing attention of the government to environmental protection,

recycling, recycling and reuse is very important in the production cycle. The management of solid waste in developing countries is in addition to its effective role in the economic cycle, as one of the major development indicators, at the macro level. economic factors, urban texture, land use, cultural factors, density per unit level, year s seasons and social customs are effective in the quality and quantity of materials, and so many factors contribute to the production of urban waste. therefore , the design of urban solid waste management system has special sensitivity and characteristics. In general classification of all kinds of waste, three categories of waste are categories: waste or organic wastes, dry or non - organic wastes and specific wastes that are observed in Figure 1 (1). Special waste is considered to be the case of environmental sensitivities due to environmental sensitivities. Industrial products are usually associated with the production of certain wastes. lack of proper management on the production and disposal of certain wastes can cause irreparable damage on the environment and society. In a more complete classification, all kinds of waste can be classified according to Table No.

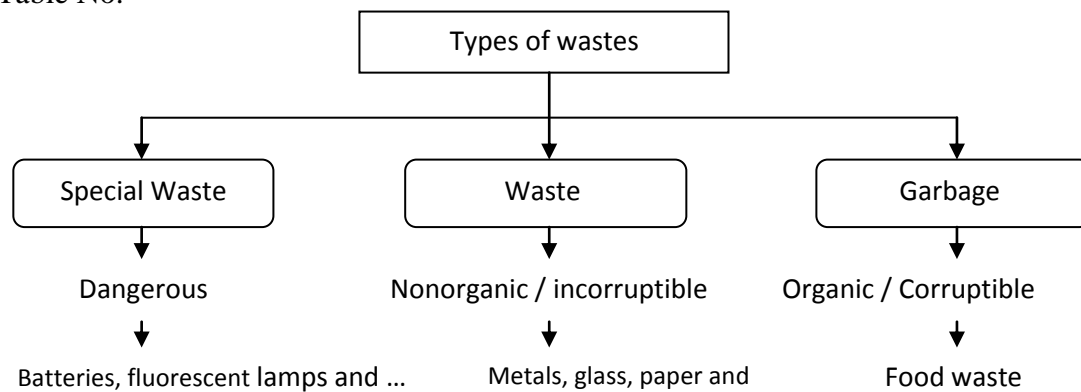


Figure (1): Types of Waste (Writers, 2018)

Recycling has two meanings, in the first sense, include the reuse of material, which means the return of a product or product to the same former use without any change in its identity; the other meaning of recycling is the separation of some of the materials from Solid waste and its processing in a way that is used again as useful materials (Amrani and Alavi, 2009). In this way, recycling is the process of processing materials consumed in products and materials for the purpose of preventing the loss of potentially useful materials, reducing raw materials consumption, reducing energy consumption, reducing air pollution from burning materials and contamination. The water from the burial of garbage in the soil by reducing the usual amount of garbage and reducing the emissions of gaseous fossil fuels compared with net production. Recycling, of course, is not just the separation and collection of materials after use, but these are the first steps in recovery. Because the collected materials should be processed or converted into other products in industrial processes and then consumed; therefore, when the materials and products were reused, the recycling cycle was completed. Figure 2 shows the basic programs in the recycling programs..

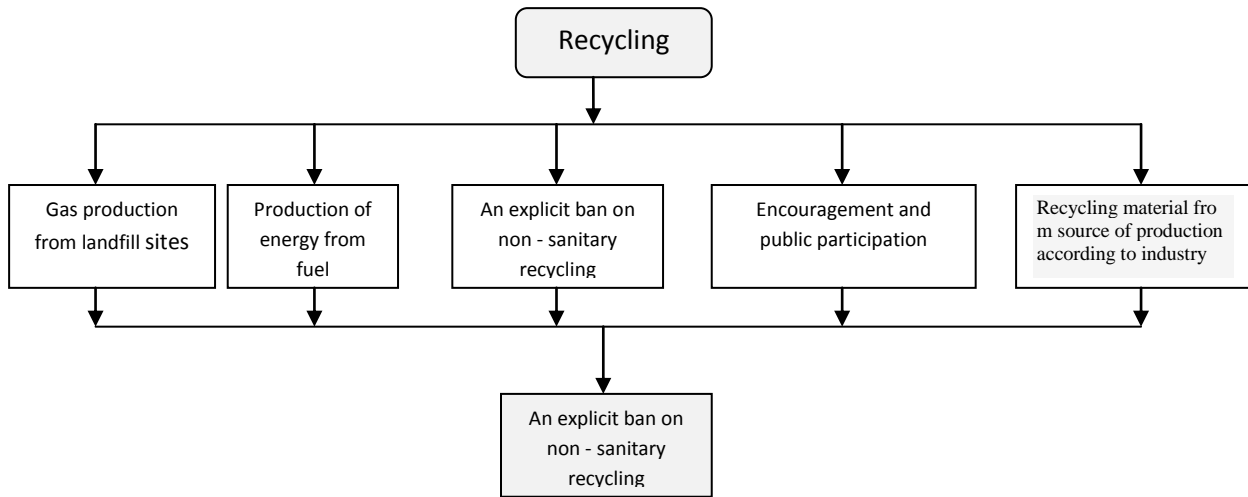


Figure (2): Basic Issues in Recycling Programs (Omrani and Alavi, 2009)

The differentiation program can lead to a reduction in waste management costs. Therefore, recycling is eco - friendly and economic activity with environmental protection programmes. As environmental standards increase, burial costs will increase in the future. Therefore, every country is required to recycle material, and ultimately it can be stated that recycling is an economic principle and requires more attention. In another classification, the most important separation techniques can be grouped into two main methods of separation of origin and segregation at the destination:

A) To separate from source of production: separation and separation method at the source is one of the most important and cheapest methods of separation and separation of waste materials. In this method, the *قابل* wastes after the separation at home are transferred to specific containers that have been installed in residential environments, and then transported by special services from the production site to the site. One of the positive features of this approach is the lack of mixing and pollution of waste materials together with the lack of infectious and double - washing and excessive washing

B) Separation in the destination: The method of separation or separation at the destination is also another method of recovery and separation of waste. In this method, recoverable waste can be separated from the inside of the material after entering the transfer or disposal centers by the traditional method, by human labor or by a variety of mechanized systems. Generally, any solid waste recycling plant and converter is composed of three basic parts: the intake, the isolation, the product preparation and production.

The processes within a comprehensive waste management system that collection, transfer, disposal and processing are recycling, are in perfect contact with each other; therefore, we need to take a comprehensive look over the whole system of waste management; this approach gives us a general picture of the waste management process. Having such a view is essential for strategic planning. On the other hand, all waste management systems are part of the global ecosystem. Only with a comprehensive approach to pressures on the whole global system can be ensured that these pressures in one region will not lead to increased pressures in other areas. Therefore, reaching a comprehensive waste management system requires major changes in the present situation. the goal of a comprehensive system is to achieve economic and environmental sustainability simultaneously. Each system component in interacting with other systems seems to be a better alternative than the changes in the old system.

Under article 1, the waste management rule of all ministries and institutions and institutions and institutions, public institutions and institutions where the inclusion of the law requires the names of names and all companies and institutions and legal entities are required to abide by regulatory regulations and policies in principle 50th of the constitution. Article 2 of the law deals with the definition of the terms and terms used, such as the environment, general waste, medical waste, special wastes, agricultural waste, waste management, waste management, and so on. in 3 - 15 articles, this law is defined as the role and function of different institutions and institutions in waste management. The scope of the organizations and the tasks assigned to them in these materials include:

Standard Institute and Industrial Research: Establish a standard of quality and hygiene products and recycling products and use them.

Administrative procedures: setting up executive regulations, establishing facilities required for recycling products and commodities, using recycled materials in production.

-Product manufacturers: Supply and paying part of the costs of recycling and separation, collection and recycling or burial of ordinary wastes according to the executive regulation of the law.

Administrative Management: The provision of waste management costs of a supplier that is tariff according to the Interior Ministry's instructions is determined by the Islamic Council of the city.

- Ministry of the Interior: Planning for the separation of normal wastes and their scheduling, and the formulation of guidelines for the organization and management of waste management in municipalities, villages and districts.

- Environmental Protection Agency: Establishing rules and procedures for the management of waste management for approval by the High Council for the Conservation of the Environment.

- Ministry of Health and Medical Education: Monitoring for health and safety, health and safety of executive agents.

- Voice and Television Organization and other educational and cultural devices: information and education on the proper separation of waste collection and recycling.

Due to the emergence of waste management systems in Iran and the lack of a well-documented management system in this regard, it is necessary to participate in all management in the country and use the experiences of each other and using successful projects of other countries that are proportional to our country. is. Considering that the control and involvement of citizenship is the highest level of participation, and it promotes educating and increases the sense of participation and sense of responsibility. Participation of citizens in urban services in a general division is divided into the following (Majlesi, 2007):

1. Awareness of decisions and plans
2. Participation in project management decisions
3. Contribution to the financing of the projects
4. Participation in human resources
5. Participation in the implementation of the projects

Educating people can be an important factor in preventing non-sanitary actions of other people in order to keep citizens informed, in addition to preventing them from taking unwanted waste disposal measures. Citizens must be convinced that their actions will be effective in preventing environmental hazards and maintaining their health. Unfortunately, solid waste management in different cities of Iran due to cultural context, population, economy, excessive consumption of materials, lack of awareness and lack of attention of people, lack of responsibility, heterogeneous and widespread nature of wastes, non-enforcement of regulations, laws and the lack of facilities in The area of urban services faces some problems. Therefore, the basic role of municipalities, which, in the opinion of many

experts, is considered to be the main focus of urban management, can be mentioned. Hence, the main issues that each city faces in terms of environmental protection and is in some way related to the duties of municipalities can be classified as follows:

1. Solid and solid waste
- 2- Water and sewage works
3. Air and noise pollution

Most environmental activities in the cities , which are almost entirely at the disposal of the municipalities, are the affairs of solid waste or waste. overview of the status quo of waste management of cities is observed that municipalities have very little success in doing this part of their tasks. According to the shortage of instruments such as the lack of scientific and specialized power required for planning and supervision, organization structure, facilities and equipment, the municipalities have failed to take effective steps to improve the city 's solid waste management system, even if their current duties and basic needs of the city have been ordered.

Urban waste status in Qom

According to studies in city of Qom, there is an average of 740 tones of waste , which are collected with 250 tons of waste generated at the city 's surface. with the population of one million and two hundred thousand inhabitants of Qom, the per - person waste per person is 600 g, while it will be used only to collect and transfer these wastes for each kilogram of about 1000 riyals per kilogram and up to 260 hectares of Qom land in the next 20 years. It is, however , that more than 1600 hectares of the city of Qom were polluted by the depletion of the construction of construction and waste wastes. the most common method for disposal of solid wastes in Qom is waste landfill , but the changes in the way of life and consumption patterns in the city have caused a higher rise in production of solid wastes and significant production of these substances in different urban and industrial areas, and these factors have caused adverse prospects of accumulation of waste around the city due to the lack of technical and ecological principles in disposal of wastes. On the other hand , due to restrictions or loss of waste disposal, environmental stringent environmental controls have contributed to the disposal of wastes and wastes, increasing their volume and weight in rapidly increasing the cost of services and supporting waste disposal. in order to overcome many problems, it is necessary to take strict measures to optimize the various stages of management of waste and storage in place, collection, transportation, processing, and sanitary burial. in all stages of management , one of the keys to success is awareness and public participation. This is , of course , important in the production and maintenance stage at the location where it reflects on the later stages, namely collection, transportation, and disposal. The development and development of the city of Qom is such that about 22 million square meters of the city are swept away from the city, which is being cleaned and cleaned by more than 1000 people per day. The per capita cleaning per year is estimated at a cost of 200 billion riyals annually. by ratifying the statute in 2002, the reorganization and transformation of Qom municipality began operating in the form of management of waste disposal in Qom. Management, monitoring, design and planning for the production, temporary storage, collection, transportation, recycling, processing, disposal of ordinary wastes within the statute are listed as the functions of the organization. in 2006 , with the formation of the board and the organization of the organization, it was officially developed as an organization in the field of management of Qom. The activities of this organization were initially due to the lack of necessary funds for a volume of 800,000,000 Rials in the areas of volumizing, transferring and burial of sanitary waste from medical centers by equipping separate fleets, improving the landfill and remediation of contaminated land Alborz site, as well as basic studies and preparation and formulation of the policy of this organization. In the years 2007 and 2008,

the executive process of studies was on the agenda of the organization, which increased the budget ceiling of 5,000,000,000 Rials. Over the years, efforts have not been made in waste paper projects, the organization of waste and construction waste, the design and installation of a factory for separation at the destination, the organization of the normal waste of factories and the launch of a collection plan for infectious wastes of offices Grew up. In the years 2011 and 2012, the establishment of a center for the elimination of worn out vehicles, the implementation of the organization of the classroom, the education and information of target groups and the implementation of a demarcation plan with a population of 90 thousand people, was an effective step in the implementation of the policy of the organization. In 1990, with the view of establishing an independent organization with a single waste management unit, the foundations for the establishment of a waste management organization were laid down. Finally, the charter of the waste management organization this year was approved by the Minister of the time of the country. The waste management organization in its 90th year after the approval and notification of the Ministry of the Interior after 5 years, organized an organization called the Organization for Recycling and Converting Materials to provide services to the citizens of the city of Karimah, Ahl-ul-Bayt, has been working to establish an integrated organization in The field of normal waste management began. The Qom Municipal Resource Management Organization is currently planning to implement 100% of its implementation, with three technical, administrative and executive deputies, with the efforts and efforts of all of them, with the assistance of the honorable board of directors and the respectable council of the organization, according to the budget approved in year 2014. The Qom Municipal Solid Waste Management Organization intends to take effective steps in this field from the element of production to the disposal of academia and science. It is tasked with planning, organizing, surveillance and operating operations related to production, collection, storage, transportation, recycling, processing, and disposal of ordinary municipal waste as well as training and information on the administrative management of ordinary wastes. qom municipal waste management organization is considering the proper implementation of waste management elements in different sectors with relying on the separation of origin, mechanization of collection system with priority of utilization of segregation and sanitary disposal of wastes by focusing the management of wastes and its operating code, healthy environment for citizens. According to estimates, more than 100 tons constitute more than 100 tons of material and it will save more than \$ 1000 in annual economic savings if the amount of 10 g per citizen of waste production is reduced. therefore, to eliminate or reduce adverse environmental impacts (water, air, soil) natural wastes using systematic and administrative methods in line of production, storage, recycling, recycling, recycling and disposal of systematic systems is aimed at improving the management of wastes by encouraging and attracting private sector investors from the important goals of municipal waste management organization. According to statistics in Qom waste management organization, the city of city waste production from 2011 to 2028 solar system is considered as the separation of production source in Table 1.

Table 1: The amount of waste produced in Qom from 2011 to 2028 (Azari and others, 2013)

Amount of waste (tons per day)				
The type of production / year	2011	2018	2023	2028
Residential	667/3	780/2	911/2	1063
Administrative - commercial	47	55	63	75
Health-Therapy	9/5	11/4	13/5	16
Debris	6000	7500	9000	10000
Parks and green spaces	4	5	6	7
Total waste excluding construction waste	718/3	840/2	980/2	1145

As it is mentioned in the table, the major waste generated in Qom is related to construction waste. In developing countries, waste debris accounts for a large part of urban waste that, in addition to its high costs for disposal, has environmental disadvantages as well. The volume of debris is so high that now this issue is not only in Iran, but also in advanced countries, it is a social and environmental problem. It should be noted, however, that waste recycling is cost-effective, and in the short term it has no economic justification, but increasing the cost of primary materials as well as the long-term environmental damage, the issue of recycling construction waste is important. The most important economic justification for the recycling of construction waste can be the high cost of primary materials, the cost of carrying waste from the place of production to the disposal site and the cost of burial. Most of the building waste is produced in cities in the old tissues and in the developing and modern tissues. With regard to the issuance of building permits or permissions for change by the municipality, the main centers of production of these materials can be identified in different regions and areas. Residues after construction waste are the most waste produced in Qom. household waste has always been a complicated problem in urban waste management due to the wide variety of materials available in these wastes, including glass, metal, paper, plastic, organic materials, etc. and full mixing of these materials, several problems in waste management especially the segregation issue. also the combination of wastes in different seasons of the year and in geographical regions with different climatic conditions hinder that a single version is complicated for all cities. Commercial and industrial waste is usually more uniform and higher in higher values; therefore, the management system that can manage the home waste also has the ability to manage waste from other sources. Among the significant actions of the municipal waste management organization, the construction of waste management waste at the origin and training of 125 thousand tons of urban households, plans to establish waste management services in compost, modification of waste management services, formation of waste management services, and exploitation of waste management services, include collection of waste management services at the city level and exploiting the administrative and educational building of the Alborz Complex. according to the arrangement of citizens in the field of separation of citizens in the field of separation of origin, close to ten percent of the city's level wastes are collected as segregated and the continuation of an increase in dry waste segregation of origin can be effective in reducing the number of effective waste fleet and to be effective at cost management. as shown in Fig. 3 (3), the planning of waste collection in Qom city strategy will be mechanized, as in many countries in the country, which requires planning and scientific studies and the use of successful experiences of other leading countries in this regard.

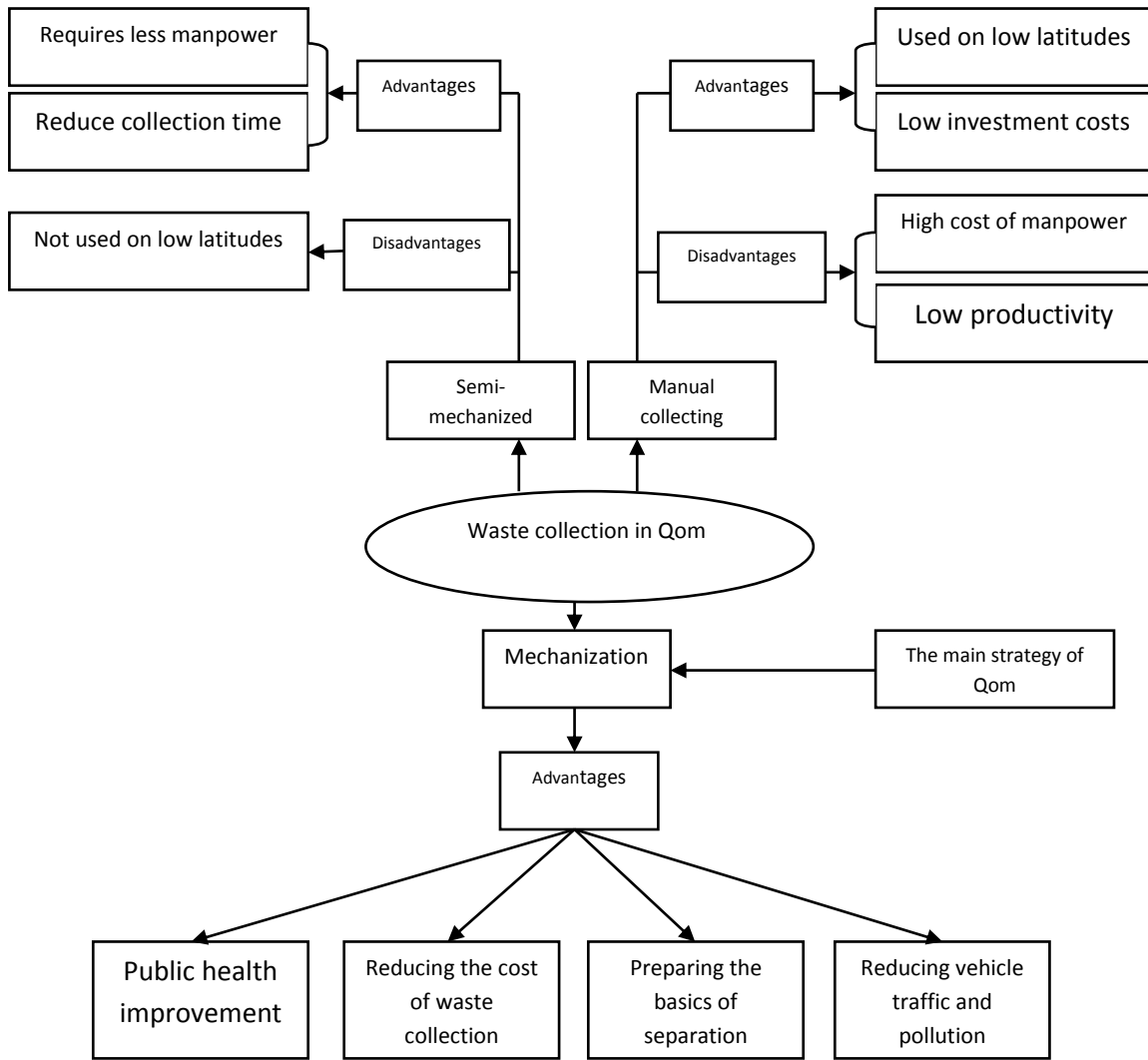


Figure (3): Waste Collection Methods in Qom (Writers, 2018)

Considering the increasing progress in collecting, transporting and disposing of urban waste, the main strategy of Qom municipality is to mechanize this process and it seems that this will be achieved with plans in the near future. In general, Qom Municipality waste management policy is classified in the form of high priority and medium priority policies as seen in figure (4). These policies can be considered in the framework of the Waste Management Strategy in the form of short-term and long-term goals.

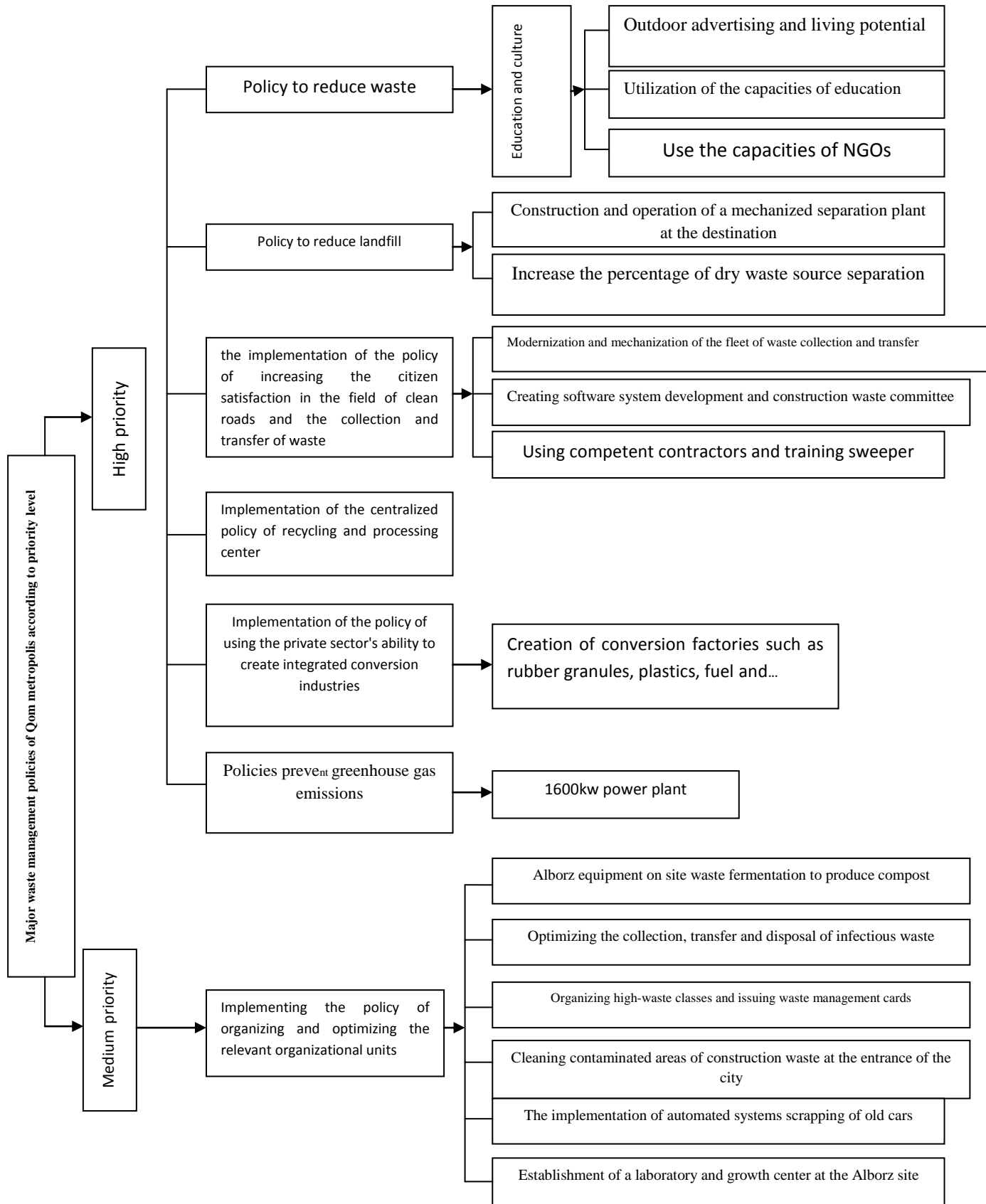


Figure (4): Major policies of waste management organization of Qom metropolis (Writers, 2018)

Conclusion

Reproduction and recycling are the main goals of the Qom Municipal Solid Waste Management Organization, which is actually seeking to reduce waste generation, deformation and reuse, and ultimately to recycle and restore non-consumable items to the recycled cycle. Therefore, it can be seen that in the management of municipal solid waste management, there are now many problems that cannot be expected to improve significantly until they are eliminated. It is possible to plan and supervise the construction of a water and wastewater network within the legal area of the city regarding municipal water and wastewater management. According to the laws of the duty to provide and maintain urban health, the municipalities are responsible for the important role of sanitary and sanitary disposal of sewage, and this institution should have an active and comprehensive monitoring of the process of collecting, managing and recycling urban wastewater. In the case of air pollutants, the municipality must have the most important executive responsibility at the city level, with the adoption of approved air pollutants in the disturbing business sector, which is to prevent pollution, to prevent pollution, to shut down, to destroy and Transfer of air pollutants. In the case of noise pollution, one of the examples mentioned in the municipal law is the creation of noise from various sources such as all occupations, workshops, factories, workshops and the like. These laws allow the shutting down or transfer of these resources, if not eliminated and prevented from making them to the municipality. It seems that one of the main reasons for the lack of attention to urban environmental issues in municipalities may be the lack of a defined organizational and organizational structure for environmental management. The municipality has provided facilities for collecting waste from the level of houses and neighborhoods and has attracted the required human resources, therefore, it is not necessary to invest in new and high-quality solid waste, but through the installation of different reservoirs for types Waste materials, including glass, paper, plastic materials and metal materials in neighborhoods, can provide background training for the separation of waste. Encouraging people to take this action and even buying garbage at the beginning of the work can strengthen the culture of development and then gradually become known as a citizenship duty to the people. since the control and interference of citizenship is the highest level of participation, building and increasing the sense of participation and feeling of responsibility, urban managers have a specific view of this issue and plan. It increases the level of information and awareness of the people around recycling and its benefits, and has a direct relationship with people 's cooperation in the project of origin. Face-to-face training, public education, public education, posters, banners, etc., change the attitudes of people in the community and citizens, and toward the goal of promoting appropriate insights on cooperation in the field of recycling and separation from the source Is pushing. comprehensive studies on the understanding of systems capabilities and collection equipment regarding the physical, social and economic structures of the region to increase system productivity and study, design and optimization of equipment and machinery of the mechanized collection system is one of the other measures that the waste management organization should consider. Other important actions in urban waste management can be referred to as:

-Study and development of recycling schemes and separation of origin to reduce municipal waste delivered to the collection system.

- Developing and developing special education programmers for citizens.
- Placing a breakdown program from the source at the top of the waste management programs in the city of Qom
- Creation of recycling systems and separation of hazardous wastes at the source of production

- Equipping and transporting the waste and using modern and modern systems with modern technologies.
- Suitable positioning based on the priorities and criteria of health care and the preparation and maintenance of waste landfill sites and the full implementation of safe and safe burial with the Environmental Protection Approach
- Educating, training and promotion of citizen participation in decision making and waste management policies in different areas of the city, especially regarding the deployment of reservoirs and mechanized collection plan.

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