

## **Investigating the role of education and culture in separation from the source of household waste of Iran**

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### **Abstract**

One of the most important strategies for management and waste reduction, which is currently considered as the first priority in urban waste management in many countries, is the separation from the source. The basis of the separation from the source plane is based on the participation of households. Separation of waste from the source is one of the processing techniques that is done to increase the efficiency of waste recycling. If the issue of recycling and the use of recycled materials is not addressed, it will cause the loss of natural resources and irreparable damage to the environment. With proper separation of waste, the cities can be saved from environmental pollution and the urban economic cycle can flourish. According to the Law on Waste Management, city managers must use methods that enable the responsible elements in waste management to succeed and prevent unprincipled disposal and return of capital to the economy, protect the environment, help the economy Society, job creation and citizen participation. Obviously, municipal waste management has a social, cultural, economic, political and organizational nature and the managerial behavior in this system as well as the behavior of citizens will be mutually influential in this system. One of the effective methods in this regard is the correct and principled culture for separating waste from the source of production. The main part of the separation of wet and dry waste currently in Iran is done by the private sector, which separates the dry waste from the tanks in the streets. But the important thing in this regard is to train families to do this separation before disposing of waste. If waste is segregated at the source of production, many costs can be reduced and energy consumption can be saved. Now, if it is possible to carry out trainings on culture-

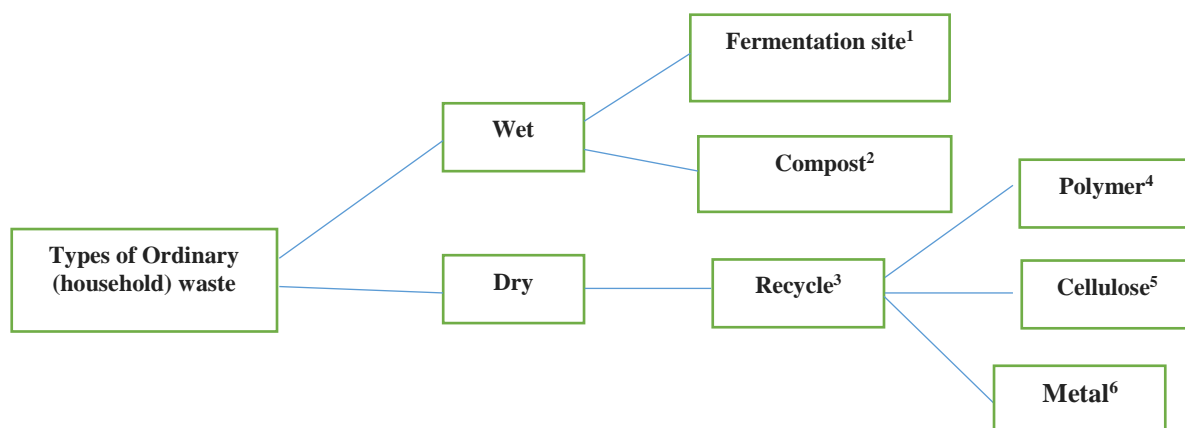
building and implement it by using specialized educators in the field of separation from the source, a great step has been taken in preserving the environment and national resources.

**Keywords:** Citizen participation, municipal waste separation from the source, recycling

### Introduction

Accelerated urbanization and increased consumption of materials, goods and waste production have led to reduced health and environmental health in cities (Mohammadi et al., 2017). Solid waste management can be based on an inter-sectoral activity and based on engineering and economic principles between its various elements, ie production, storage, collection, transportation, processing and recycling, and finally waste disposal (Raza Naqavie et al, 2009). Municipal solid waste includes items such as durable and non-durable goods and materials, containers and packaging materials, food waste, tree waste and other organic and inorganic materials dumped in residential, commercial, office and industrial areas. Residential waste is being generated in residential units and by the people living in them (Charles R et al., 2013). One of the issues that is widely discussed in the world health and economy is paying attention to environmental pollution and dealing with them through various environmental programs, including municipal waste management (Rakhshani nasab and Safari., 2016) and one of the most important strategies for proper urban waste management, which is currently considered as the first priority in urban waste management in many countries, is separation and separation from the source (F. Pvrasghr,2011). Waste separation or waste classification is the process by which waste is segregated into different elements. Classification can be done manually in homes or it can be done by different methods and tools before the waste reaches the landfill. Separation of waste means separating waste into two categories. It is wet and dry. Now, with these definitions, separation from the origin means that this separation is done at the origin of its production (Omrani., 2009). Separation of wet and dry waste from the source is considered as one of the main links in the waste recycling and utilization chain (Matsumot.s,2011).

### Types of Ordinary (household) waste



Types of Ordinary (household) waste and their separation and recycling process

1. the chemical breakdown of a substance by bacteria, yeasts, or other microorganisms, typically involving effervescence and the giving off of heat.
2. decayed organic material used as a plant fertilizer.
3. convert (waste) into reusable material.
4. a substance that has a molecular structure consisting chiefly or entirely of a large number of similar units bonded together, e.g., many synthetic organic materials used as plastics and resins.
5. an insoluble substance which is the main constituent of plant cell walls and of vegetable fibers such as cotton. It is a polysaccharide consisting of chains of glucose monomers.
6. a solid material that is typically hard, shiny, malleable, fusible, and ductile, with good electrical and thermal conductivity (e.g., iron, gold, silver, copper, and aluminum, and alloys such as brass and steel).

Increasing the level of segregation from the source can reduce waste collection and disposal costs, which is an important part of waste management costs. Separation from the source can also reduce pollution of recyclable waste and reduce recycling costs (Karimi. J et al, 2015). Separate municipal waste collection, in addition to direct economic and environmental effects, has several other benefits, such as reducing the need for landfilling for municipal waste ( Fahiminia M .et al,2013).

### **Education and social participation**

One of the main tools in attracting citizen participation is behavior change through culture building and is the most important strategy for creating, changing and promoting citizenship and education ( Khajeh-Shahkuhi et al., 2015). Important factors of popular participation are awareness through education, changing attitudes and motivating and creating beliefs and then participating. The first step in attracting public participation is awareness and education (Ballestero, E. 2003). In urban waste management, education has a special place and every country and every region should undertake education using appropriate tools and special cultural and social conditions. These trainings are done in order to reduce the amount of waste produced by different departments and finally cooperation in the separation program from the source (moazen., 2011). Therefore, the development and implementation of training programs in waste management is very important. Of all the new tools and techniques, the media is considered one of the most important tools for achieving goals in the age of communication and information. The media are able to encourage people to participate more through education and to institutionalize important motivations for their participation. Therefore, people, as waste producers, play a key role in the implementation of waste separation schemes, and the implementation of this type of project is not practically successful without their participation. Figure 2 shows the factors that affect the level of individuals' participation.

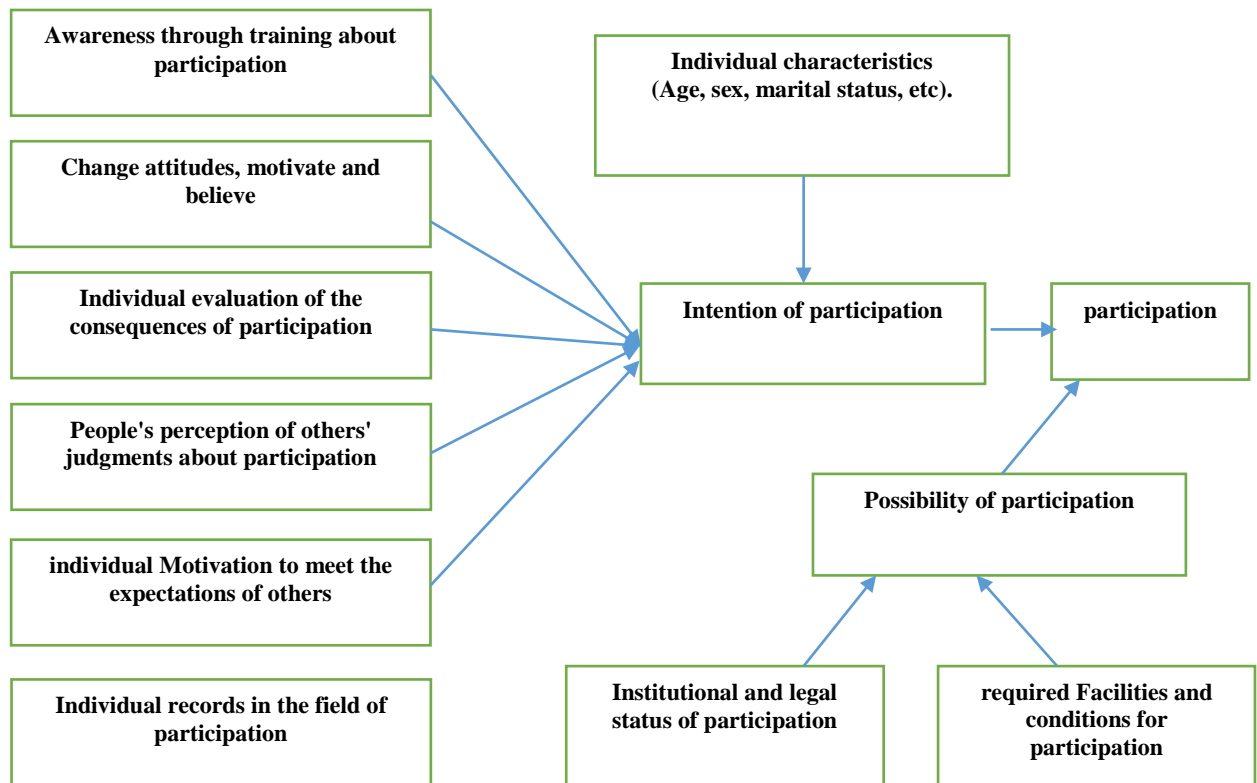


Figure 2. Influencing factors on the level of individuals' participation

Another solution that has been proposed to deal with the waste overcrowding crisis is recycling. Recycling is the most important concept in waste management and is considered a green step towards sustainable development. Recycling can reduce costs by 54% (sorur., 2012). The best and most ideal form of recycling is separation from the source. Considering that the source of recycled materials is mostly residential and industrial, the implementation of waste separation projects from the source by households is very important. Separation of waste at source is one of the most challenging issues in developed countries, which has been considered in recent decades (Rafie et al., 2013). Recycling and reuse of waste not only reduces the problems of city officials, but also can be considered in terms of increasing national income. A large part of dry waste has economic value, the recycling of which can help the country's economy and create an opportunity for income generation in large cities, but also can prevent the waste of raw resources and reserves of the country (Aliyari et al., 2010).

In addition to generating income, the recycling industry can be help to create jobs in communities. In Southern California, for example, the U.S. Department of Health and Consumer Affairs said the recycling industry, in addition to generating millions of dollars in profits a year, has created 15,000 jobs ( Nazari A et al,2014). In developing countries, less than 10% of municipal waste is recycled and only a small amount of this recycled material meets acceptable standards (Asase M et al,2009). Recycling reduces pollution from waste incinerators and reduces pollution of water sources due to landfill leachate. In addition, less waste is buried and incinerated, as well as less raw materials are extracted from the mines, so recycling is the most important way to reduce waste (Guerrero L A et al, 2013).

Recycling reduces the use of toxic chemicals that used to make products made from raw materials. It also helps prevent global warming (Tchobanoglous G et al,1993). Recycled materials reduce water

pollution compared to the production of products from virgin materials. One of the benefits of recycling is reducing the need for landfills and preserving capital (preventing imports and generating revenue from the sale of recycled materials) (Moh Y C et al,2014).

#### 4. Results and Discussion

With all the above definitions and concepts, it can be concluded that culture-making is an important and vital issue in waste separating from the source. It is true that culture-building alone does not work, but plays an important role in Achieving the goals. So, with culture building and basic education and popular participation, a big step can be taken to achieve the goals. Such projects need legal support before they need financial assistance. Forming participatory teams in neighborhoods to create and develop a culture of recycling, holding training workshops on waste separation from the source, setting up group and individual training courses for housewives, setting up fixed and mobile photo exhibitions and production products Recycling, holding educational exhibitions for children and using children's creativity in spreading the culture of recycling in families, holding conferences, designing and installing silks and advertising tracts in public streets can be ways to expand The culture of waste management among the people. Face-to-face education, education through the media, preparation and distribution of cultural products, and education through symbolic activities to raise awareness and create a proper environmental culture are the foundation of the pervasiveness of this culture. According to the results of the present study, institutionalizing the separation scheme from the source requires the participation of the people. A participation that cannot be achieved without the necessary knowledge. Therefore, in urban management planning, according to the cultural, social, and economic conditions of the society, the type of desirable educational system to raise citizens' awareness should be determined. Recycling, in addition to improving health and the environment and preventing the waste of resources, plays an important role in improving the economy of communities, so much so that waste is referred to as "dirty gold". Since the source of recycled materials is mostly residential and industrial, the plan pf separation wastes from the source can be have a important place.

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