

CREATION OF THE WASTE-PROCESSING CLUSTER IN ALMATY REGION AS MAIN FACTOR OF IMPROVING ECOLOGICAL SITUATION IN ALMATY REGION

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Abstract

In article creation of a waste-processing cluster is described; creation of this cluster considerably will increase investment appeal of the city, will improve an ecological component and also will create many workplaces in the region.

Also in article are showed the main ways of garbage recycling in Almaty city Kazakhstan.

There is scheme of cluster which consisted of garbage cultivation plants garbage recycling plants and garbage burning plant.

Key words :Garbage cluster region plant ecology municipal solid waste

Subject of creation of a waste-processing cluster is performance of a complex of the actions directed on the solution of problems of the organization of utilization, storage and processing of household and industrial wastes [1 p.21]. We considered Russian experience of creation garbage recycle cluster such was made in Republic of Karelia. This was considered in the Long-Term Investment Program Production Wastes and Consumption of the Garbage of the Republic of Karelia (Russia) for 2012-2014 yy. [1 p.21]. In this programme considered creation of cluster - territorial merger of the municipalities which are in common solving a problem of processing and burial of MSW- municipal solid waste, and having waste recycling plants in the territory. Creation of effectively operating system of production wastes and consumption garbage will allow raising a level of ecology and standards of living of the population of the republic and solution of a number of important social and economic tasks.

The situation which developed now in the Republic of Kazakhstan in the field of the address with waste conducts to dangerous environmental pollution, irrational use of natural resources, significant economic damage and poses real threat to health of the population.

The analysis of a situation in this field revealed a number of the main problems:

- Discrepancy of dumps ecological and sanitary - hygienic norms [2 p.5];
- Absence organizations which can operate dumps, licenses for activities for collecting, use, disinfecting, transportation, placement of dangerous wastes [2 p.5];
- Existence of a large number of unauthorized dumps;
- Absence of points on sorting and collecting secondary raw materials, and also absence of separate garbage removal to storage places.

Above-mentioned problems arose owing to:

- The outdated system of garbage which wasn't developed since the USSR [2 p.5];
- Spontaneous formation of dumps in the republic without standards of the nature protection legislation;
- Absence of the accounting of education and movement of production wastes and consumption.

In the territory of the city of Almaty the sharpest problem of utilization and cultivation of garbage of MSW - (municipal solid waste) exists [2 c.5]. In the city there is absence well developed and modern infrastructure of their processing and utilization. Practically all formed waste without processing is placed on dumps, many of which doesn't conform to sanitary, hygienic and ecological requirements on placement, arrangement and operation of such specialized objects [2 p.5].

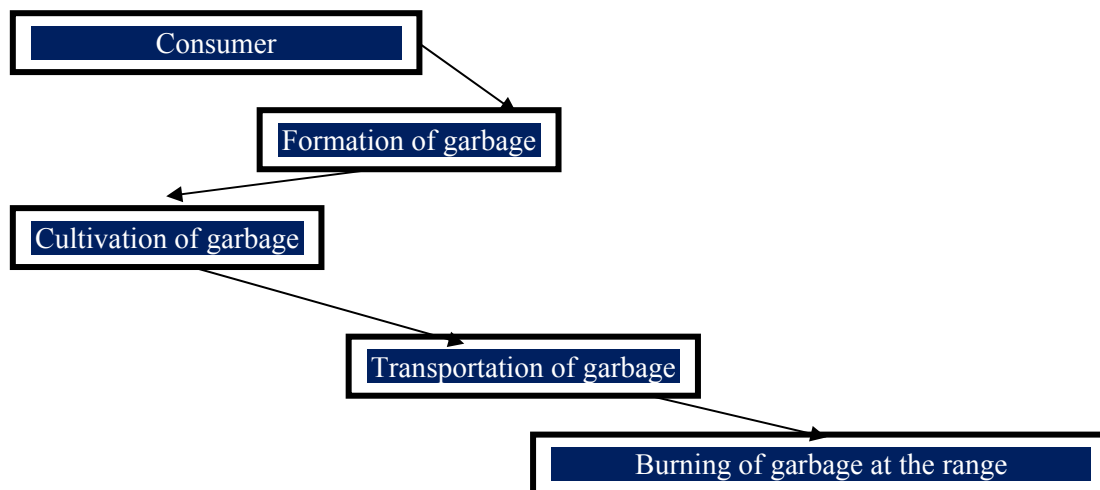
One of the actual problems of a state of environment is the problem of collecting, neutralization, burial and processing of industrial waste [2 p.5]. For the city it is characteristic, insufficient development of secondary processing of waste that is explained by lack of infrastructure and economic incentives at economic entities. The problem of annual formation of a large number of wastes is connected with a considerable material capacity of the productions using the technologies which aren't allowing to process most fully initial raw materials and other materials [2 p.5]. The vast majority of the organizations in the city are characterized by a high specific rate resource- and a consumption that leads to considerable formation of waste [2 p.5].

In our country only 3-5% of garbage is processed [2 p.5]. While 95% of all garbage of a domestic origin simply lie at open-air and permanently pollute air and the soil. Therefore more, it is becoming actual projects on processing of municipal solid waste. In the developed countries less household waste it is taken out on dumps and it is more and more processed in the industrial way [2 p.5]. However in Kazakhstan, this problem is still not solved. In particular in the southern capital industrial emissions and a city garbage dump for many years pollute the city and nearby areas. Under grounds for garbage huge territories are used [2 p.5]. The volume of municipal solid waste in

Almaty makes about 1400 tons per day [2 p.5]. From this number, the household garbage makes about 500 tons, municipal-316 tons, and industrial wastes-70 of tons per day. Services in garbage transportation from the territory of the city carry out 73 specialized organizations [2 p.5].

On the one hand, waste are the main pollutants of environment (hundreds of millions tons of waste are annually formed), with another - often represents the valuable products potentially suitable for processing and recycling [2 p.5]. Garbage dumps round the cities occupy the huge spaces, poisoning with products of rotting and fermentation ground waters and atmospheric air [2 p.5]. In Kazakhstan total volumes of the (municipal solid waste) - MSW approximately about 15 million m³ a year, i.e. 2 m³ on one inhabitant. In the developed countries this figure makes 0,3-0,6 m³ 3-4 times smaller. In total in Kazakhstan 3,2 billion municipal solid waste are saved up. The main share of this waste is the share of the large cities where their accumulation makes from 1,3 to 2,6 m³ on one inhabitant [3 p.6]. Generally speaking, at assessment of the situation with household waste it is about creation of the waste recycling plants including as division of waste, and some productions on processing of groups of waste. On such complex technological process which can be divided into two stages has to be implemented: preparatory and actually processing [3 p.7]. The preparatory stage includes sorting of the arriving waste. Thus the scrap of ferrous metals, non-ferrous scrap, polymeric materials, a cullet and other separate for the purpose of further realization. Of ferrous and non-ferrous metals are packed by scrap separately and are taken out on places of acceptance on collecting scrap metal [3 p.8]. Other groups of waste are subject to processing especially as on each of them tens technologies of processing are known today. Besides, at a stage of sorting large-size waste which problem of use is solved in each case depending on their look separate. For this purpose, expediently at plant to organize a site on cutting of large-size waste and production, for example consumer goods products. The organization of the enterprises for collecting and waste recycling can become the solution of this problem [3 p.8]. In the end of this process some types of garbage can be used as electroenergy by burning. In Sweden about 65% household receive electroenergy from garbage [3 p.9,10].

There are following types of collecting garbage:



a1- Existing system of garbage in Almaty territory

Note-draw up by author by source 4

1. Collection – transportation- burning - the simplest ecologically and economically inefficient scheme [4 p.6,18]. The additional land plots and investments on construction of landfills are constantly necessary, it is necessary to put in a tariff a condition of funds for creation of funds for elimination of the MSW ground - (municipal solid waste).

2. Collection –transportation- sorting- cultivation –utilization more effective system. Thus considerable investments are required.

3. Separate collecting – transportation - cultivation - utilization-briquetation-burning –collection of MSW- municipal solid waste- at sources of their education with use of the container of one or different flowers for a different type of MSW- (municipal solid wastes), or use of underground containers.

4. The most effective control system of MSW- (municipal solid waste) - waste-free production and consumption.

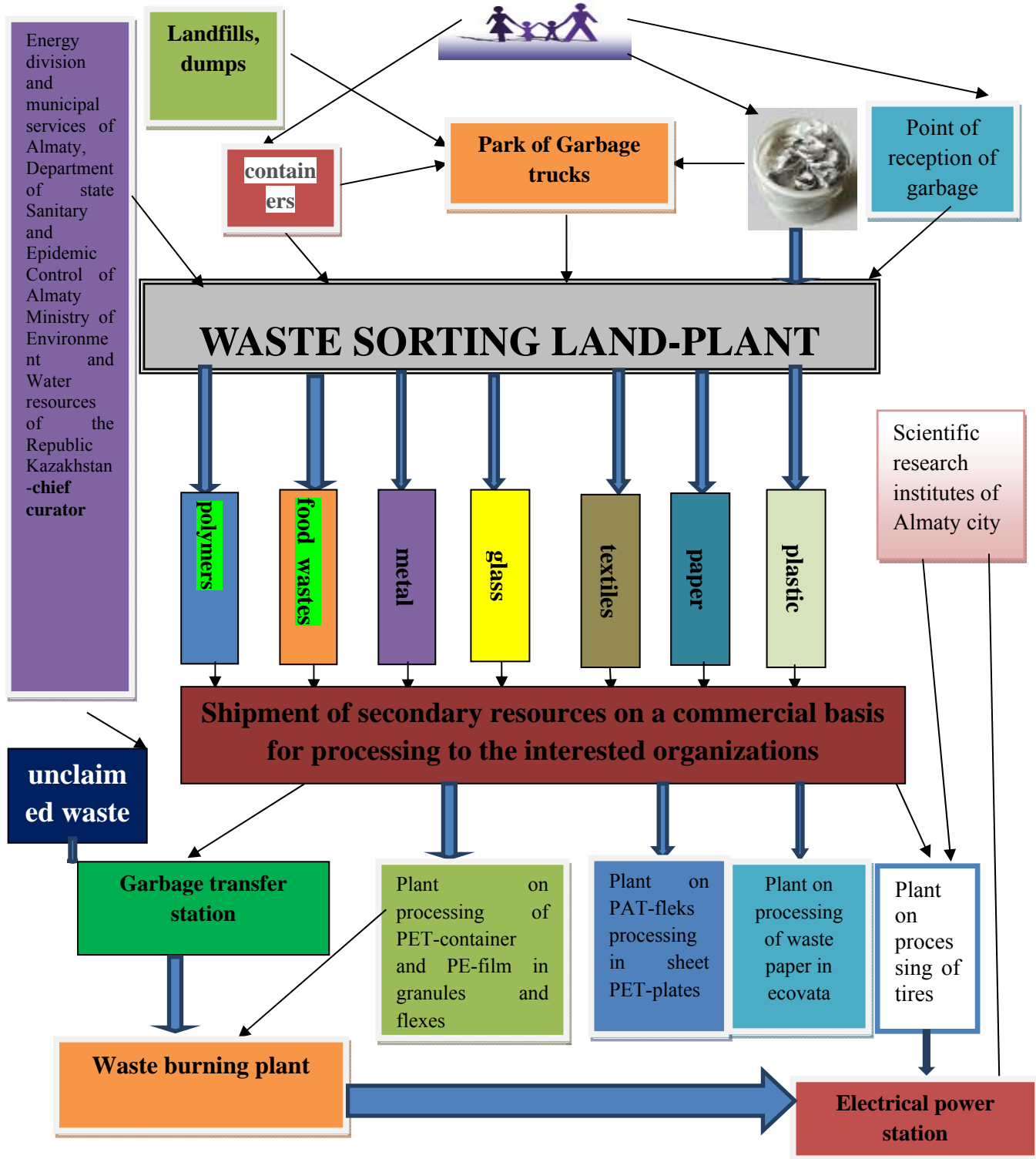
At us now in Kazakhstan the first type of collecting garbage is used.

The purpose of creation of a waste-processing cluster – creation of economically effective and investment attractive branch of production wastes and consumption, decrease in negative impact of waste on environment by reduction of volumes of waste disposal, increase in volumes of their utilization and processing [5 p.17-18].

Tasks of designing of a waste-processing cluster [5 p.17-18]:

-Decrease in negative impact of waste on environment;

- Ensuring ecologically safe storage, processing and destruction of waste;
- Increase in volumes of use of waste as secondary raw materials;
- Reduction of streams of warehousing and prevention of hit of dangerous wastes on the ground and dumps;
- Carrying out recultivation and sanitation of the territories occupied with dumps of MSW – (municipal solid waste)-(it is firm - household waste);
- Development of the differentiated norms of formation of MSW - (municipal solid wastes);
- Ensuring development of infrastructure in the address with waste, including construction and commissioning of grounds for placement of production wastes and consumption with a network waste sorting, the garbage sorting stations and waste recycling plants by the cluster principle;
- Development of system of collecting, utilization, processing of the wastes which are secondary resources;
- Reduction of the area of the land plots occupied under places of warehousing of waste by elimination of unauthorized dumps;
- Involvement of the population of the republic to the solution of problems of improvement of environment.



a2- the Scheme of creation of a waste-processing cluster in Almaty region
Note-draw up by author by source 4

Main participating elements of a waste-processing cluster [1 p.21]:

- A waste sorting platform plant where city municipal waste will arrive. This waste will be sorted on plant lines: small fraction of waste (plastic bottles, paper waste paper, cullet, metal, organic waste and other). The sorted material is pressed and goes in the respective directions: or as salvage for further processing, or as not scrap part of MSW - (municipal solid waste) for burial in the form of briquettes.

- The garbage transfer station - allows transporting considerably large volumes of waste with use of appropriate means (the large-capacity trucks served by one driver and consuming less than fuel on ton-kilometer).

- The waste recycling plants: Plant on processing of PET polyethyleneterephthalate (polyair) - container and PE-film polyethylene in granules and fleksa; Plant on processing of PET - polyethyleneterephthalate (polyair) - fleks in sheet PET - polyethyleneterephthalate (polyair) - plates; Plant on processing of waste paper in ecovata; Plant on processing of tires [1 p.21].

The waste burning plant allows destroying unnecessary garbage [1 p.21]. All high-temperature technologies of processing of MSW –(municipal solid waste) on technical essence can be reduced in 3 groups. Technologies in which MSW - (it is firm - household waste) without preliminary sorting subject to pyrolysis are referred to the first group; pyrolysis is resulted by disintegration of waste on pyrolysis gas and the carbon and mineral rest. The second group includes technologies in which pyrolysis is added with gasification of the firm pyrolysis rest. In the third group technologies of modern high-temperature pyrolysis in which MSW are exposed to thermal influence with a temperature over 1000 degrees are defined.

- Electrical power station - Almaty where the electric power from garbage will arrive;
- The transport organizations - garbage trucks and cars which will deliver the processed production.
- Bodies of the state power: Energy department and municipal services of the Almaty, Department of state Sanitary and Epidemic Control of Almaty;
- Ministry of Environment and Water resources of the Republic Kazakhstan-Chief Curator;
- Scientific research institutes (research institutes): which will participate in a cluster: Research institute of environmental problems of Al - Farabi; Institute of an organic catalysis and electrochemistry of D. Sokolsky; Institute of molecular biology and biochemistry of M. A. Aytkhozhin, Institute of microbiology and virusology of Almaty; Institute of chemical sciences of A. Bekturov at KBTU –Kazakh British Technical University of Almaty; Institute of botanics and phytointroduction affiliated state enterprise of Almaty. Center of biological researches MESRK-Ministry of Education and Science of the Republic of Kazakhstan;
- Containers.

Also the main participants in this cluster –people it is very important to explain people why you need to put garbage in selective containers. In many countries cultivation of garbage is very effective part of business and also brings many benefits in social and ecological aspects of development of economy.

Cultivation of garbage- selective cultivation of garbage improve ecological situation Almaty region and will create many working social places for people and will create ecological business Almaty region.

The list of the used literature:

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