SHWEDISH EXPERIENCE OF MANAGEMENT OF SECONDARY RESOURCES CADASTRE

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The article analyzes the problems of functioning and dynamics of the management reform and management of secondary resource cadastre in the Kingdom of Sweden. The scientific paradigms of the analysis of the use of secondary resources of the Kingdom of Sweden are presented.

Secondary or they can also be called technogenic resources annually "reproduced" at a significant and rapid pace and increasingly occupy new territories of natural landscapes. The growth rates of waste in the industrialized countries of the world exceed twice the dynamics of material production and natural population growth. In each civilized country, the accumulation of solid industrial and domestic wastes causes the risks of environmental disasters that need to be utilized for their solution. Ukraine is no exception.

Establishing and maintaining a cadastre of secondary resources at the state level provides an opportunity to make managerial decisions on preventing environmental disasters and bringing technogenic landscapes to the fore.

For example, the Kingdom of Sweden considered how the philosophy of society, dealing with secondary resources and managing their cadastre changes with the adoption of targeted state management decisions..

Keywords*: cadastre, waste, secondary resources, recycling.*

Formulation of the problem. Problems of using secondary resources remain one of the most important in terms of improving the efficiency of inventory management and secondary resources for enhancing the ecological situation of the environment.

Analysis of basic research and publications . Research of the concept of management and using of secondary resources in works N. Robinson, S.

Belyaev, R. Berling , G. Vygovskaya, T.Galushkina , O. Gubanova , N. Zinovchuk , O. Kashenko, V. Kisly, L. Melnyk and others, which analyzes the need to create and maintain a cadastre of secondary / man-made / resource.

Article targets. The purpose of the article is studing and detailed analysis of the Kingdom of Sweden , their experience of the management of the secondary resource cadastre .

Secondary resources are materials and products that are after the original using can be reused in production as output raw material or product. Secondary resources are the source of additional material and technical resources.

The cost and specific capital investments decrease due to using secondary resources, and the pace of economic growth accelerates. The main sources of secondary material resources are waste production and consumption of products.

The waste from manufacturingis the remainder of raw materials, materials, semi-finished products formed during the production of products or the working and lost completely or partially initial consumer properties.

The waste consumption – products and materials that have lost their consumer properties as a result of physical or moral wear. In practice there is distinguished unused waste for which there are currently no conditions of using and secondary raw materials, which can now be reused.[1]

The transition from the era of "resourceful wastefulness" to an era of rational resource consumption is associated with two main points. The first of them is that the 1970 energy crisis gave a strong impetus the development of energy-saving technology, contributed to the beginning of the transition of the world economics from the extensive path to intensive. In many industries of material production and non-productive sectors have significantly decreased energy costs, which led to the saving of hydrocarbon raw materials. The second point is associated with a decrease in "direct" resource extravagance. So, with a huge amount of annual rock mass, which extracted from the bowels of the planet, for the production of finished products was used no more than 20%. As a result, for many years in the dumps has accumulated hundreds of billions of tons of different rocks. On these technological

"cemeteries" are also billions of tons of ash power plants and slag – waste metallurgical factories. Many rocks and waste fossil raw materials are suitable for the production of the whole a number of metals, chemical products, building materials – bricks, cement, lime, etc.

One of the major changes in world resource provision related to the transition to widespread using of secondary raw materials that are becoming a "new raw material base" of the world economy. Some scientists predict the inevitable advent of the era of a reversible using of resources when in the economy the main raw materials will become waste, and natural reserves will be backup sources of supplying.[1]

When reversible using of non-recurring resources as if transformed into renewable. At the same time secondary resources are annually "reproduced" in the expanded form – the paces of growth of volumes of waste in industrially developed countries exceed in twice the dynamics material production and natural population growth.

The deep utilization of secondary resources contributes to implementation low-waste and non-waste technologies. Of course, waste-free technology is the perfect model which modern production is oriented. Reach 100% no waste is practically unreal. Therefore, the value of more than 90% is accepted to consider appropriate non-waste production, and 75-90% – low-waste consumption. The creation of such productions is a long process that requires a number of technological, economic, organizational solutions and other tasks[2].

Sweden recycles almost 99% of all household waste in that or that another form. This means that in the last seven years the country has gone a long way revolution in processing, considering that in 1975 only 38% of households waste has been recycled. The recycling stations, as a rule, do not exceed 300 meters from any residential area. Most Swedes divide all recycled wastes into their homes, and put them in special containers near residential area or dump this waste in recycling station. In 2015, nearly 2.3 million tons of household waste was converted on thermal energy. In the same year, Sweden imported more than 1.3 million tons of waste.[3]

In Sweden, there are two main ways recycling of secondary resources – recycling and incineration.

Recycling. Recycling is preceded by a separated collection or sorting of solid household waste (MSW). It should be noted that the quality of sorting depends to a large extent on the general culture and discipline of the population. After sorting the removed components recyclable, making a commodity product. Today, Sweden is one of the leaders in Europe for separated assembly and recycling. For example, 80% of construction waste (this is the largest fraction waste) is for recycling. In 2009, 51% (!) of all solid waste was separated and went for recycling. Recycling rate reached 95%, aluminum containers – 91% tin containers – 84%, paper and cardboard – 82%, PET bottles – 81%, batteries – 71%.

The federal government has set a minimum level of collection 75% for glass, aluminum and PET packaging and has the right to demand from manufacturers and service campaigns provide assemblies. At the same time, the federal government has the right to oblige the manufacturer and importers to pay a fee on recycling, which is paid previously. The fee is paid to private organizations, which authorized and provide collection under the supervision of the federal authorities.

Incineration. Thus, the requirements for levels of pollutants in the composition of emissions was revised approximately every ten years. It was stimulating improvement of technologies and emission control systems . Incineration is already a technically wasteful method of waste recycling, this is a long practice allows precisely identify its advantages and disadvantages. [4]

Vine Vikvist, CEO of the Swedish Association of the management control and waste recycling (Avall Sverige), considers that the Swedes can do so more motivating that about half of all household waste is burned, it is converted into energy. He explains that reusable materials or products mean less energy for creating product than burning and creating another from scratch. "We are trying to move the garbage in motion, " as we say, from burning to recycling plastic, metal, glass, electric appliances, light bulbs and batteries . Many municipalities also encourage consumers to divide food. And all this is repeated used for recycling in

compost . Newspapers are transformed on a paper mass, bottles are reused or melt in new things; plastic containers become plastic raw materials; food is composted and transformed into soil or biogas through a difficult chemical process. Freight garbage is often used on secondary electricity or biogas. The spent water is cleared to the level drinking. Special waste vehicles go to cities and collect electronics and hazardous waste such as chemicals. Pharmacists take residual medicine. The Swedes give their large waste, such as used TV and or broken furniture, to the center of recycling on the outskirts of the cities. Waste is relatively cheap fuel, and Sweden developed a great power and excellence in efficient and profitable waste management. In 2014, Sweden even imported 2.3 million tonnes of waste from other countries. In the result of burning – the ash is 15% of the garbage weight after burning. From ashes metals are segregated and recycled, and others, such as china and tile, which are not burned, sifted for extraction of gravel, which is used for road construction. Approximately one percent still remains and is exported to the landfill. The smoke from incinerators consists of 99.9% not toxic carbon dioxide gas and water, but everything is filtered through dry filters and water. In Sweden, burning waste for the production of energy is no doubt. [5]

In the Swedish agency HansWrådhe of protect the environment (Naturvårdsverket) make a **proposal to the government to increase the tax on garbage collection** . This will raise awareness of each citizen of the country with this problem . Together with government agencies and corporations, Wrådhe has developed a plan of the waste prevention measures, including how to encourage producers to produce longer products from waste. The agency is also considering the possibility tax deduction for some equipment repairs . According to him, "advertising, backed by the state on how to avoid food processing products can also help"."And less toxic substances that used in production, mean less products that requiringcostly disposal. "Swedish level of second recycling is 49.8%, from 2006 it already ahead of recycling in the UK - 44.6%. Through brave policy initiatives conducted by the administration department in Cardiff, in Wales Council closer to

60 % recycling in 2015. In 2014-2015, the country burned 49.5% of the municipal waste, index in the UK was only 27.1%. [4]

Swedish waste incinerators were partly built in returnto prohibitionon the scrap heap that was introduced in the 2000s. 2009-2010 for Sweden was partially canceled European export restriction on "residual waste "(things that can not be recycled), which made it possible for incinerators installation for providing appropriate standards of energy efficiency, and waste imported from abroad.

Sweden can import about 800,000 tons of trash from other countries for cogeneration installations. This is beneficial because for European countries because restrictions on landfills is increased. Sweden with its innovative technologies, in fact, in 2016 in within the framework of the global innovation index, is among the leaders of innovation, which is conducted by Cornell University / INSEAD and WIPO /. Only Switzerland is ahead of Sweden, as it is the leader in innovation in the world. Sweden is innovational country, such as the solar safe water system and Spotify, but more innovative brain power was directed at solving one of the biggest problem of the world – waste[5]. As the world community is conceived and builds managerial decisions, Sweden has used immediate measures to combat waste a decisive approach to waste management on a large scale. From 2000 to 2015, Sweden burned an average of about 50% of all municipal solid waste. [6]

Thanks to its great efforts in combustion the amount of garbage that is located in landfills in Sweden, equal to only 1% of their total volume solid household waste. In addition, Sweden hassucceeded in reducing its dependence on fossil fuels fuel, using the energy from burning waste. About three tons of waste is equal to one ton of fuel oil, which is enough good relation to waste, more rich than fossil fuels at present day. In fact, it is for this reason that Sweden turned the waste into profitable product. Selling your services to and from burning and importing garbage with Sweden is ready to pay for green pasture, Sweden has deepened its pockets and has attracted more energy for its factories and utilities. Sweden seems to achieve its promise purpose. Even if this is true in the short run, in wide scale, and in the long run, this strategy is negative will affect the very basis of

zero waste and circular economy. Sweden argues that it is undergoing revolutionary recycling, referring to the fact that they are processing almost 100% of household waste. But as it may be true, when almost 50% of their waste is burned. Incineration and recycling are two completely different things. From 2000 to 2015 Sweden recycled an average of 33% of the total amount of solid waste (by with the exception of compost). Only in 2015, Sweden processed only 32% of total solid waste (48% with included compost) that still leaves the way from the common goal of the European Union to the recycling of solid waste from the EU to 65% by 2030. When all is said it was done, however, Sweden took sixth place among the European ones recycling countries in 2015. This may seem like a reason for celebration, but with years of focus onincineration for many years, has led to stagnation of utilization rates since 2006. In some cases, sorted garbage actually burns out, which leads to motivation municipalities and individuals to invest time and money in waste. For this reason, many recycled raw materials are lost at burning, which leads to the destruction of valuable goods, which, as a rule, will contribute to a higher, more efficient level recycling and production cycle. Sweden needs in cinerationfor energetic and economic needs. That motivate to continue to construct factories which are expensive for construction, operating and also polluters that factories produce.

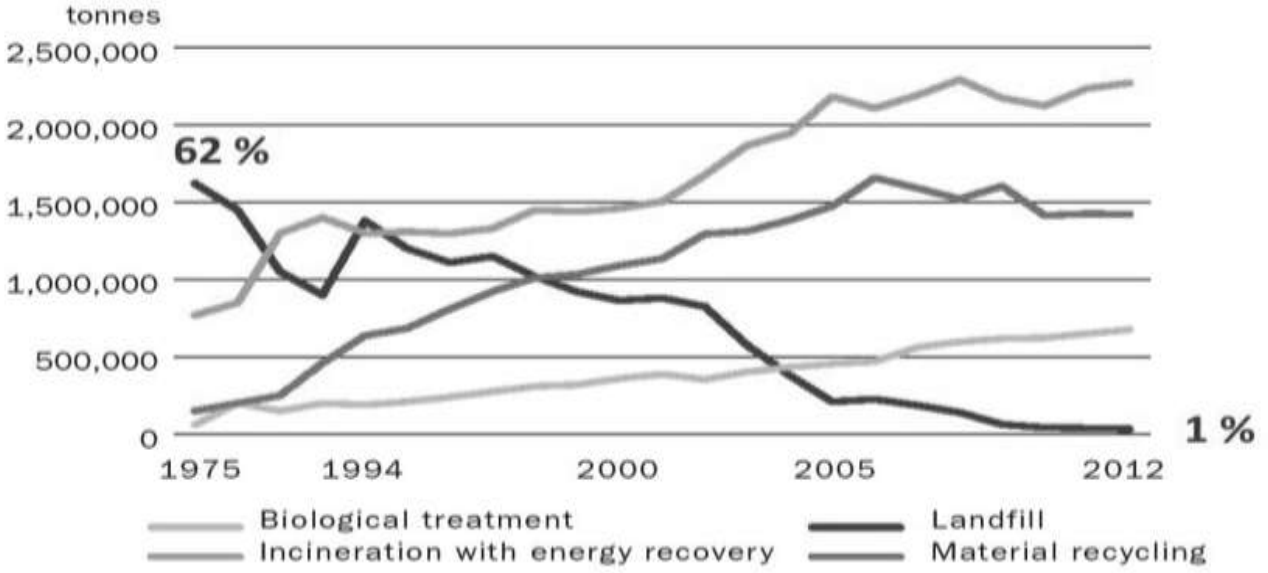

Fig. 1. Schedule of the development

of processing and Sweden's secondary resources in 1975-2012 [7].

Swedish Association for Waste Management and Recycling/WeineWiqvist / deals with the creation of long-term solutions their slogan "zero waste". They consider less to create waste, and that all waste produced should be recycled in something. Perfection can never happen, but this is, of course, an exciting idea. Hopefully, Sweden will strive to improve its recycling targets waste and reducing their total solid waste, however, as at present, their actions do not correlate with the principles of zero waste, as opposed to its official statements. In the absence of waste, the goal is not to use waste as a commodity, but completely to eliminate it. System based on reduction, reusing and recycling may only if deterrence large-scale incineration. The ENVI Committee of the European Parliament has long proposed to exclude financial support for incineration mixed solid waste, effectively constraining large-scale garbage and installing priority reduction of waste, if approved by government.

Sweden's recycling policy:

1. Sweden does not import garbage from other countries. If Sweden bought garbage from other countries to start their energy facilities, this would be one thing. But Sweden agreement lieselsewhere. Countries that send trash to Sweden, pays for household waste. So, Sweden in fact, it receives a profit from free fuel for energy.

2. Sweden does not have to take the rubbish - it's called gold the mine. According to Svenska Dagbladet , heat generating objects are wasting almost $ 43 per ton of rubbish. In 2014, Sweden was sent 2.3 million tons - this is almost $100 million. Other countries, maybe, must learn to take care of their own rubbish this is a gold mine.

3. Sweden suddenly did not run out of garbage to burn. Swedish facilities have had excessive capacity for a long time for burning garbage - if you look at only domestic waste Sweden. The using of garbage from other countries began many years ago. Partly because Sweden already in 1991introduced a tax on fossil fuels.The heating is one of the main types of energy for any country one located in the north, in Sweden, the incinerationis particularly effective - heat must be distributed directly

in centralized systems without turning it into electricity . In view of this, in recent years is an international waste dump in Sweden grow up rapidly. From 2005 to 2014, import increased four times .

Summary. Currently, the system of the recycling of secondary resources interacts on a contractual basis with various partners: with private enterprises, which are united in Federal Union of Waste Disposal and Production Institutions, which are members of the Union of Communal Enterprises. They submit reports and statistics on the amount of recycling of secondary resources on the territory of the country. The Statistic management of Sweden /Statistiska centralbyrån SCB / manages the secondary resources cadastre on territory of Sweden on state level.

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Пересоляк В.Ю

ШВЕДСЬКИЙ ДОСВІД УПРАВЛІННЯ І ВЕДЕННЯ КАДАСТРУ ВТОРИННИХ РЕСУРСІВ

У статті проаналізовано проблеми функціонування й динаміку реформування управління та ведення кадастру вторинних ресурсів в Королівстві Швеція. Наведено наукові парадигми аналізу використання вторинних ресурсів Королівства Швеція .

Вторинні або їх можна ще називати техногенні ресурси щорічно «відтворюються» значними великими темпами і все більше займають нові території природних ландшафтів. Темпи зростання обсягів відходів в промислово розвинених країнах світу перевищують в два рази динаміку матеріального виробництва і природного приросту населення. В кожній цивілізованій країні накопиченням твердих промислових та побутових відходів викликає ризики виникнення екологічних катастроф що потребує по їх утилізацією свого вирішення. Не являється виключенням і Україна.

Створення та ведення кадастру вторинних ресурсів на рівні держави дає можливість у прийняттю управлінських рішень по запобіганню екологічних катастроф та приведення техногенних ландшафтів в попередній стан.

На прикладі Королівства Швеція розглянуто, як з прийняттям цілеспрямованих державних управлінських рішень міняється філософія суспільства, щодо поводження до вторинних ресурсів та ведення кадастру їх.

***Ключові слова**: кадастр, відходи, вторинні ресурси, рециклінг.*

Пересоляк В.Ю.

ШВЕДСКИЙ ОПЫТ УПРАВЛЕНИЯ И ВЕДЕНИЯ КАДАСТРА ВТОРИЧНЫХ РЕСУРСОВ

В статье проанализированы проблемы функционирования и динамику реформирования управления и ведения кадастра вторичных ресурсов в

Королевстве Швеция. Приведены научные парадигмы анализа использования вторичных ресурсов Королевства Швеция.

Вторичные или их можно еще называть техногенные ресурсы ежегодно «воспроизводятся» значительными большими темпами и все больше занимают новые территории природных ландшафтов. Темпы роста объемов отходов в промышленно развитых странах мира превышают в два раза динамику материального производства и естественного прироста населения. В каждой цивилизованной стране накоплением твердых промышленных и бытовых отходов вызывает риски возникновения экологических катастроф что требует по их утилизацией своего решения. Не является исключением и Украина.

Создание и ведение кадастра вторичных ресурсов на уровне государства дает возможность в принятию управленческих решений по предотвращению экологических катастроф и приведения техногенных ландшафтов в прежнее состояние.

На примере Королевства Швеция рассмотрено, как с принятием целенаправленных государственных управленческих решений меняется философия общества, по обращению к вторичных ресурсов и ведения кадастра их.

***Ключевые слова**: кадастр, отходы, вторичные ресурсы, рециклинг.*