INFLUENCES OF DISPOSABLE PLASTIC PRODUCTS USAGE ON ENVIRONMENT IN LATVIA

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Abstract: *The production of disposable plastic products has been started by people in 1950 and proceeds to this day. Nowadays, the amount of single-usage plastic products equals to 40 percent of all plastic produced yearly. Such products as food wrappers and plastic bags can persist in environment for hundreds of years, while the lifecycle of these products can vary from a minute to some hours. The research is based on information of usage the disposable plastic products and its influences on Latvian environment. Either some solutions for decreasing the quantity of plastic used in Latvia are represented in that research.*

Keywords: disposable plastic products, single-usage, environment, lifecycle, pollution, production.

Introduction

One of the most problematic issue of current world is a pollution problem. Pollution- is the defilement of water, air or earth by substances that are destructive to lives of living organisms. Pollution can be caused by nature, volcanic eruption as an example, which is very rare or by human activities, industrial waste mostly.

The invention of Bakelite (trademark of phenol-formaldehyde resin) in 1907 was the beginning of the plastic Era on Earth. However the end of 20th century, showed the pollution by that material in many environmental areas across the world. The problem of plastic pollution is that it is not a fault of any particular country. The data all over the world shows that plastic pollution is caused by the activity of all countries and demographic points worldwide. Nevertheless, the amount of plastic used is increased in highly- populated centers respectively.

The trade association Plastics Europe states that plastic production worldwide grew from 1.7 million tons per year in 1950 to 303.1 million tons in 2010 and 396 million tons of plastic by 2018. Moreover, countries with coastline spread into the oceans between 5.3 million and 14 million tons of plastic annually.

In addition, plastic has harmful impact also without being debris. Even the manufacturing of plastic goods has harmful impact on the environment (through the realize of compounds).

In accordance that the problem of plastic pollution is global, the solution for that issue must be global respectively. Most of the solutions to that problem is focused on decreasing the amount of disposable plastic used in daily life or limiting the amount of plastic produced in general.

As one of three Baltic countries, Latvia is well-developed country with market economy and freely access to Baltic Sea. Being part of the European Union gives to Latvia the opportunity to fight with the plastic pollution on European level and in cooperation with EU members. Latvia implements many solutions related to the problem of the plastic pollution and environmental issues.

The **main aim** of the research is to analyze the influences of disposable plastic products usage on environment in Latvia and find out solutions for improvement of plastic pollution problem.

Objectives of the research are:

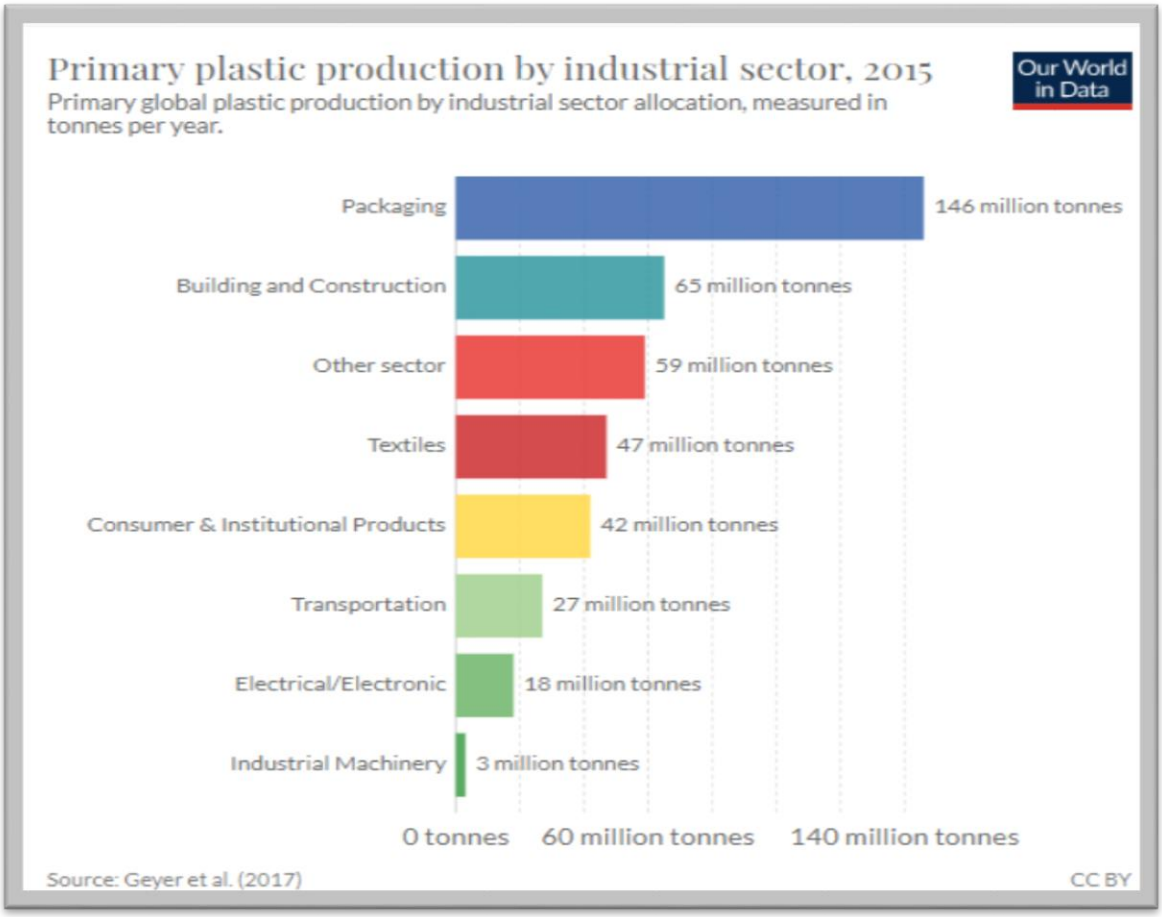
1. To define the problem of plastic pollution in Latvia;
2. To find out measures already taken by Latvia against the plastic pollution issue;
3. To research new solutions for the case;
4. Make conclusion and give recommendations for improving plastic contamination position in the country.

Methodology: to get primary data and necessary information, the author used internal internet resources. All recommendations of the research are made according to the personal experience of the author by 2 years of living in Latvia.

1. Theoretical information and statistical data

According to the Our World Data organization, in 2010 the global plastic waste rate was 275 million tons yearly. Moreover, the organization states that by 2015, 7.8 billion tons of plastic was produced worldwide- it is more than one tone of plastic per alive person.

Nowadays, plastic is a material that is used by many sectors of human life. Based on the research of the Our World Data organization: Packaging sector has 42 percent of plastic production, while the second place in top is in building and construction sector with 19 percent of plastic production in total. The picture below shows primary plastic production by sectors in 2015 (*Picture 1*). By the given data, it is visible that packaging is the dominant in generation of plastic waste. However, the product life cycle for packaging plastic products is very short, while its impact on environment is extremely high.



Picture 1: Primary plastic production by industrial sector, 2015 (*Our World data*)

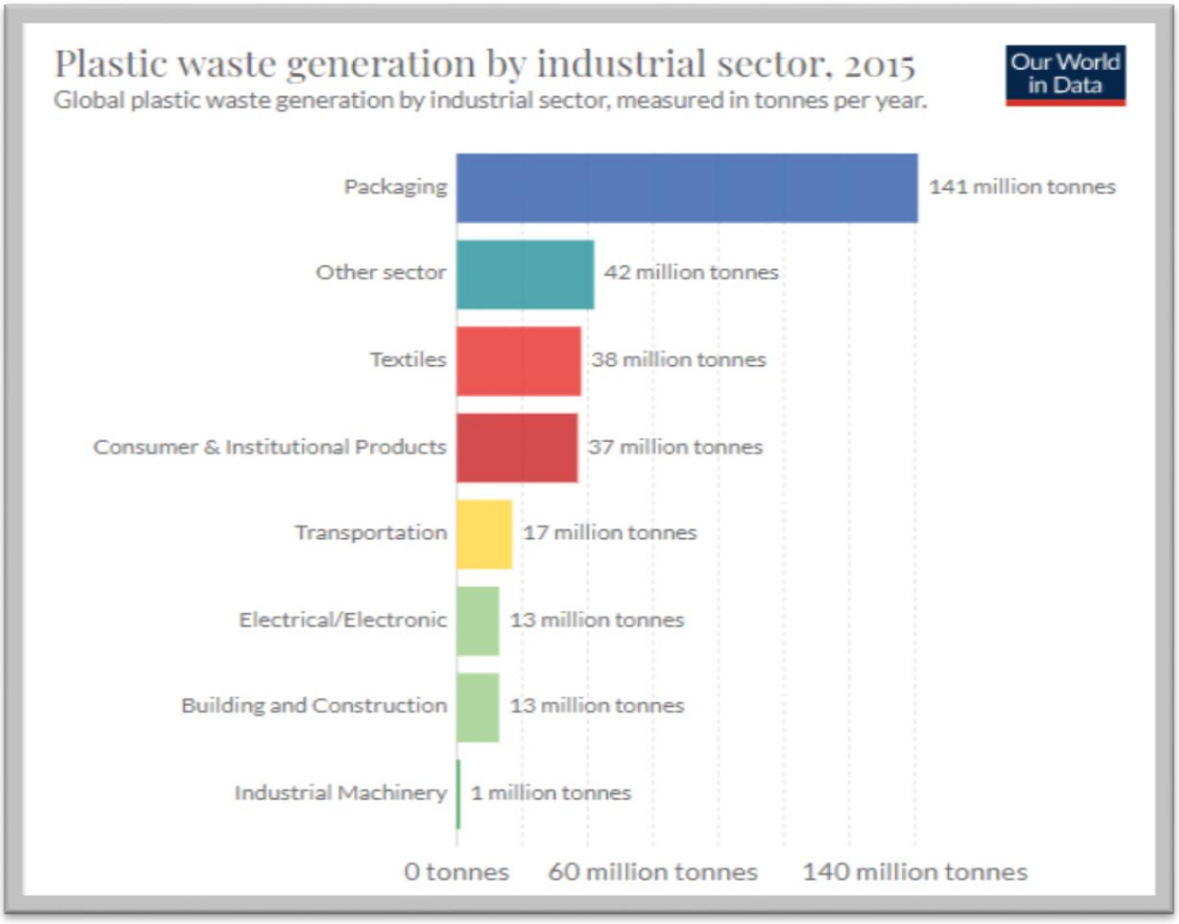
It is important to mention that bigger amount of plastic is ended up as a debris. Plastic pollution is mainly caused by abundance of plastic waste on the earth and water surfaces of the planet.

Based on picture above, there were 407 million tons of plastic produced in 2015 by various industrial sectors together. While around three-quarters ended up as a waste- 302 million tons of plastic (*Picture 2*).

The Our World Data organization gives data about amount of plastic waste generated divided by countries. According to the data[1]

1. In the world, two countries with higher amount of plastic waste production per year are: China- 59.08 million tons per year and USA- 37.83 million tons per year.
2. In the Europe, two countries with higher amount of plastic waste production per year are: Germany- 14.48 million tons per year and Russia- 5.84 million tons per year.
3. Latvia has 94,935 tons of plastic waste production yearly.

[1] The Our World Data organization's research. Available at: https://ourworldindata.org/plastic-pollution



Picture 2: Plastic waste generated by industrial sectors, 2015 (*Our World Data*)

2. Latvia against plastic pollution

National waste prevention programs in Europe:

As part of the European Union, Latvia is participated in Waste Prevention program by European Environment Agency (EEA).

The title of the program on Latvian language- Atkritumu apsaimniekošanas valsts plans 2013.–2020.gadam (Waste management national plan 2013-2020). The program on Latvian language is available on http://polsis.mk.gov.lv/dokuments/4276 . In addition, the contact person for that program in Latvia is a Ministry of environmental Protection and regional Development- Ilze Donina.

The main objectives of the program are[2]:

- To reduce the amount of hazardous substances used in the manufacture of goods and materials;
- To decrease the level of waste, promote product reuse and extended usage;

[2] Overview of national waste prevention programs in Europe. Available at: https://www.eea.europa.eu/themes/waste/waste-prevention/countries/latvia-waste-prevention-waste-sheet

- To decouple waste generation and the associated impacts on the environment from the economic growth.

Baltic Solutions for Plastic pollution:

In February 2017, CCB (Coalition Clean Baltic) and IUCN (International union for Conservation of Nature) organizations started a project in a Baltic region, with the support of the Swedish Postcode Foundation. The idea of the project is to demonstrate the influences of plastic pollution in Baltic region on biodiversity, ecosystems, climate change and food safety. The project combines desk and field research with laboratory experiments.

The last workshop for the project was in Riga, Latvia on 8 October 2018. On the workshop were discussed many aspects of fight against plastic pollution in Baltic region:

- HELCOM Regional Action Plan on Marine Litter: drawbacks and prospects (Mikhail Durkin, CCB);
- Marin plastic Footprint (Julien Boucher, EA Shaping Environmental Action);
- Plastic free Baltic: from political commitments to practical work (Eugeniy Lobanov, Center for Environmental Solutions/ Maria Weber, Polish Ecological Club);
- And other important topics.

On 25 October 2018, the parliament of Latvia – Saeima confirmed the plastic bags ban. According to amendments to the Packaging Law, stores are not able to give free plastic bags to customers. However, plastic bags with material thickness below 15 microns are still available free in shopping points.

Nevertheless, from 1 January 2025, even light plastic shopping bags must be replaced with packaging from paper and cardboards materials or any natural fabrics and disintegrate bio plastics.

Under draft plans approved by Parliament, from 2021 disposable plastic items like: straws, plates, cutlery and products made of Oxo-degradable plastics like bags, packaging and fast food boxes of expanded polystyrene would be banned out of EU market.

The consumption of single-use items will be replaced by reusable alternative exists by member states by around 25 percent until 2025.

3. New Global solutions for plastic pollution issue

As the problem of plastic pollution is a huge international issue, there are plenty ideas for reducing it from different part of the world.

1) Innovations against ocean and marine pollution:
   Seabin project- Australian company produces special sea bins that collects debris in water surfaces. The feature of the seabin Innovation is that it can collect micro plastic (less than 2 mm size) as well as normal size plastic litter.
   Ocean Cleanup- Project from the Netherlands. Idea of the innovation is to collect plastic debris in large water areas. The concept of the invention is a large raft in the form of a long tube, floating on water and collecting all the ocean plastic, creating the shape of a sphere.
2) Recycling products innovation:
   Adidas sneakers from recycled plastic – The Adidas brand created the pair of sneakers 95 percent consists of plastic from ocean areas and 5 percent of recycled polyester. Each pair of shoes is made out of 10 plastic bottles.

Eco leather form bananas- Green Banana Paper Company produces wallets made out of recycled banana peel.

Natural made plastic- Indonesian entrepreneur invented plastic made of cassava plant. This kind of plastic can easily replace all plastic goods used today. This plastic material decomposes within few month on land or marine surfaces.

3) Reusable goods innovation:

Reusable packaging- Bee's Wrap Company creates the food-packaging wrap made out of cotton, beeswax, jojoba oil and wood resin. That kind of wraps is washable and can be reused many times. Moreover, that packaging is easily recycled.

Fabrics shoppers- the idea that is already implemented by many countries and companies. The shopping bags that are made out of fabrics is washable, recyclable and reusable. That fact is making fabrics shoppers sustainable products.

Avocado dishes- Mexican company BioFase is producing disposable cutlery and straws made out of avocado pits. The period of decomposition of those products is 240 days.

4. Conclusion

To conclude, the author wants to summarize all the results and theoretical part of the research and evaluate that the plastic pollution problem is a huge global issue of 21st century.

To achieve the research goals, the author:

- Defines the problem of the plastic pollution in general and in Latvia;
- Finds already implemented solutions taken by Latvian government against the plastic pollution;
- Shows new international innovations as solutions against the plastic pollution.

Based on the research can be summed up that:

1) The invention of plastic material in 1907 was the beginning of new ecological catastrophe today. Since 1950, the world plastic production increased from 1.7 million tons per year to 396 million tons in 2018.
2) Latvia is one of three leading countries in Baltic region. The membership in European Union gives to the country possibility to fight against plastic pollution on European level with the support of developed countries of European Union. According to the statistics, Latvia generates 94,935 tons of plastic waste yearly. When the Germany generates 14.48 million tons per year. Nevertheless, Latvian government tries to improve the plastic pollution in the country by implementing new laws and rules.
3) The most common solutions to fight with plastic pollution is the process of limiting the amount of disposable plastic used in daily life and even decreasing the amount of plastic produced overall. The author gives some new international innovations as examples of fight against plastic pollution issue.

The results of the research show that Latvian government does care about the plastic pollution in the country. The government implements new laws in accordance with European standards.

5. Recommendations

The author is satisfied that Latvian Government is paying attention to the plastic pollution issue and trying to improve the environment of the country. As the example for the better improvement in ecology, all the international innovations against plastic pollution can be used in Latvia.

There are some recommendations from the author that could help achieving higher goals in fight against plastic pollution problem:

1. Governmental support for the companies that are operating on environmental safe basics. Nowadays, plastic pollution is on of the main aspects of environmental equilibrium. That means that the companies operating based on environmental safe principles must be priority for governmental support. The environmental safe basics are most time and money costly. That is why without the support from government, the companies, which are operating based on these basics would not be able to exist.
2. Collaborate with European countries against the plastic pollution. As being member of European Union, Latvia has many opportunities to work with countries of EU to achieve collective goal in environmental area (As example – Coalition Clean Baltic).
3. Implement new global innovations in Latvia against the plastic pollution. As the research shows, ideas are already successfully implemented globally. Introduction of new international innovations in the fight against plastic pollution in Latvia may positively effects on Latvian environment. Moreover, innovations in plastic pollution area could bring new opportunities for improvement in that sphere.

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