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BAKALÁŘSKÁ PRÁCE

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Sustainable Development Goals with the main focus on SDG no.12 and its context in the Czech Republic

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Sustainable Development Goals with the main focus on SDG no.12 and its context in the Czech Republic

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Prohlašuji, že jsem práci zpracovala samostatně a použila jen uvedených pramenů a literatury.

Plzeň, červenec 2021 ……

Poděkování:

Chtěla bych velmi poděkovat svému vedoucímu bakalářské PhDr. Ivoně Mišterové, PhD. za cenné rady a čas, který mi věnovala.

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List of acronyms

BPA- Bisphenol A

CO_2- Carbon dioxide

CSR- Corporate Social Responsibility

CZK- Czech crown

DNA- Deoxyribonucleic acid

EU- European Union

EuPC- European Plastics Converters

GDP- Gross domestic product

GOTS- Global Organic Textile Standard

HIV/AIDS- Human immunodeficiency virus/Acquired Immune Deficiency Syndrome

IPSOS- a combination of IFOP and ISOS

IUNC- International Union for Conservation of Nature

LDPE- Low-Density Polyethylene

LED- Light-Emitting Diode

MDGs- Millennial Development Goals

P3HB- Poly-3-hydroxybutyrate

PDK- Polydiketoenamine

PEFC- Programme for the Endorsement of Forest Certification

PET- polyethylene terephthalate

PHAs- Polyhydroxyalkanoates

PHB- Polyhydroxybutyrate

PLA- Polylactic acid

PP- Polypropylene

PVC- Polyvinyl chloride

rPET- recycled polyethylene terephthalate

SDGs- Sustainable Development Goals

U.V.- ultraviolet

UN- United Nations

UNEP- United Nations Environment Programme

1 Introduction

The objective of this bachelor’s thesis is to introduce in detail the impact of the United Nations Sustainable Development Goals in the Czech Republic. It deals with the specific goal- number 12- sustainable consumption and production.

In recent years, there has been an increasing discussion about sustainability in all fields. Responsible production and consumption are essential in many sectors in order to decrease the material footprint. Whether one wants to or not, information on this topic affects him. Every individual can contribute to a better tomorrow.

It is not just about whether it is possible to change people's thinking, but it is necessary to support these efforts with other tools, especially the appropriate laws that force companies to change production processes and repeat the use of raw materials already used. It is crucial to think of waste as any other raw material. Many companies have already been involved in responsible production. This thesis focuses mainly on companies in the food industry and the possibility of influencing their responsibility to the environment and our entire society.

The theoretical part deals with the Sustainable Development Goals and historically derivable development in society-wide thinking up to today's understanding of waste management. The next part of the theory focuses on Covid-19 and its impact on plastic wasting in the world. However, plastics do not have to be man's enemy, and it is important to realize that they are an almost irreplaceable part of everyday life.

In the practical part, the work deals with the behaviour of real companies and the company's approach to plastics management and the mechanism of their subsequent use. Real companies represented in the Czech Republic were

selected for this thesis. Both multinational companies and typically Czech companies, so that the overall cross-section of this issue is captured. It includes companies like Coca-Cola, Frusack, Scuk.cz, Elements or Tierra Verde. This part of this thesis is also supported with the glossary of selected terms and expressions from the field of chemistry with commentary.

THEORETICAL PART

2 United Nations

2.1. History

Humankind has faced many struggles in recent decades. The First World War is one of the events that significantly affected people around the world. Constant changing fights for territory, famine and fear from what tomorrow brings caused boundless uncertainty. That was the main trigger for people to start thinking about the creation of security. Thoughts of constant peace appeared, known from German Philosopher Immanuel Kant's mind. He developed an idea of a peaceful world community based on freedom. His view radically affected philosophical and political thinking. An example of Kant's influence is visible in American president Woodrow Wilson's speech on 8 January 1918, called *"Fourteen points".*[1]

In the year 1919, shortly after the First World War, the organisation named the League of Nations was established. Everything came into force when 44 Member States signed the Covenant of the League of Nations. During the first world war, the resolution of conflicts through violence proved to have negative consequences. Therefore, the goals of this community were built on resolving conflicts without violence and through agreement. As these are only beginnings, this organisation also had weaknesses or orders that could have been

[1] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.9 ISBN: 978-9211013726 [retrieved 02.01.2021]

unfavourable to the other Member States. An example is an economic sanction for rejecting the League's decision.[2]

Although the current President Woodrow Wilson was one of the main initiators of the formation of the League of Nations, the United States did not become a member. Despite significant shortcomings, the organization managed to prevent several local wars. One concrete example is the invasion of Ethiopia by Italy in 1935. The League convicted aggression and imposed sanctions against them, but these measures had no impact.[3]

However, the non-conflict period after the First World War did not last long. Germany's invasion of Poland culminated in a worldwide conflict. The League of Nations, founded to protect against future wars in its efforts to prevent this conflict, has wholly failed. Thus, the world powers were forced to find another solution. By uniting the same intentions, the idea of creating a community that would bring peace back to the world was born. And then, the world powers met to create a new, better community that would prevent warfare and seek lasting world peace, which they then named the United Nations. All these efforts were confirmed by signing the declaration, which was signed in the St. James's Palace. [4]

As Germany and the USSR took significant steps towards the future of the world, Franklin D. Roosevelt, President of the United States of America and the Prime Minister of Britain representing His Majesty's Government Winston Churchill met. This meeting was mainly about the future of the world and what steps the countries will take to help improve the current situation. The result of this meeting was the Atlantic Charter. This was followed by several business conferences where the internal structure of the organization was mainly discussed. The leading countries finally agreed to create the four most critical

[2] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.9 ISBN: 978-9211013726 [retrieved 02.01.2021]
[3] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.9 ISBN: 978-9211013726 [retrieved 02.01.2021]
[4] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.10 ISBN: 978-9211013726 [retrieved 02.01.2021]

central bodies: General Assembly, Security Council, International Court of Justice, and Secretariat.[5] However, the decisive conference came into being in San Francisco, where 50 States gathered to set up the organization to urge peace and build a better world.

I want to add part of the speech of Harry S. Truman, President of the United States, which he gave at the San Francisco conference. Mainly because of how motivational this speech is and full of hope and lust for change.

“The Charter of the United Nations which you have just signed is a solid structure upon we can build a better world. History will honour you for it. Between the victory, in this most destructive of all wars, you have won a victory against itself. […] With this Charter the world can begin to look forward to the time when all worthy human beings may be permitted to live decently as free people

If we fail to use it, we shall betray all those who have died so that we might meet here in freedom and safety to create it. If we seek to use it selfishly-for the advantage of any one nation or any small group of nations-we shall be equally guilty of that betrayal”[6]

2.2 Sustainable Development Goals

The world faces many issues. Each country has its problems that must be solved. However, most of them are the same: poverty, corruption, terrorism, organized crime, and epidemics such as AIDS and Coronavirus. Each of the events listed earlier has negative consequences. The example of the recent Coronavirus pandemic can explain this. The restrictions and regulations of the

[5] United Nations: *1944-45 Dumbarton Oaks and Yalta.* [online] available from: https://www.un.org/en/sections/history-united-nations-charter/1944-1945-dumbarton-oaks-and-yalta/index.html [retrieved 01.01.2021]

[6] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.14 ISBN: 978-9211013726 [retrieved 02.01.2021]

government have affected the economy of the state to such an extent that it reflected on decreasing in actions in the stock market. To prevent the threats from spreading further, the UN has decided to organize several problem-solving global conferences. States have agreed that the best way to combat these issues will be to set specific goals which must be met by a particular time. Thus, was born the idea of Millennium Development Goals (MDGs), which were set for fifteen years. These goals have addressed the issues mentioned above of the Member States. Enormous progress has been made in these fifteen years. Maternal health was improved, mortality of children was driven down, free primary education was started, and, above all, significant steps have been taken to fight against HIV/AIDS and other similar diseases like malaria.[7] These are real achievements supported by time data, so that they will be quoted directly below.

"Key MDG achievements:

- More than 1 billion people have been lifted out of extreme poverty (since 1990)
- Child mortality dropped by more than half (since 1990)
- The number of out of school children has dropped by more than half (since 1990)
- HIV/AIDS infections fell by almost 40 percent (since 2000)"[8]

As the previous goals were successful, the UN decided to extend them for another fifteen years. One of the reasons for enlargement was to ensure a sustainable future, which is why these goals are also called Sustainable Development Goals. The improved version now has seventeen goals that

[7] United Nations Development Programme. *Background on the goals.* [online] available from: https://www.undp.org/content/undp/en/home/sustainable-development-goals/background/ [retrieved 02.01.2021]

[8] United Nations Development Programme. *Background on the goals.* [online] available from: https://www.undp.org/content/undp/en/home/sustainable-development-goals/background/ [retrieved 02.01.2021]

apply to each industry. As these goals are essential for the researched topic, they will be quoted directly below.

These are the 17 goals:

1. “End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education for all and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity less
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development" [9]

In the past few years is the world's population expected to increase by nearly half. The future world faces several unanswered questions, but the answers are not yet to be found. No one knows what will happen when people can no longer use natural resources, the amount of which is declining every day. Therefore, sustainability should be brought into people's attention, especially multinational companies, because only companies that run the market can change the current situation.

At present, there are significant differences between industrialized and developing countries. Research to compare these countries has shown frightening results. One person in a country with a prosperous economy and developed infrastructure will use as much energy as 80 people living in one of the developing countries. This energy must be produced. Mostly it is production mediated by power plants that pollute the air to a large extent. The land and forests are the primary sources that provide natural deposits, food, and employment. If people destroy the environment to survive, future generations will take the consequences.[10]

Member States have made enormous progress since the targets were launched. Improvements have taken place in many sectors, especially in terms of energy, urban planning or responsible production and consumption. It is also essential to mention countries such as Uganda and Kenya, African states which, despite poverty and disease, seek to contribute to the mediation of a sustainable future.

[9] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.53-59 ISBN: 978-9211013726 [retrieved 02.01.2021]
[10] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.59 ISBN: 978-9211013726 [retrieved 02.01.2021]

They have been actively involved in research with prosperous countries such as the United States or France to reduce the global material footprint.[11]

2.3 Goal no.12 Sustainable consumption and production

Of all Sustainable Development Goals, this work pays particular attention to goal number 12, which deals with sustainable production and consumption. At present, as mentioned earlier, there is no balance between man and the environment. Humans use natural resources, even though there are fewer of them than are needed for the population. This goal seeks to ensure that people, and especially companies, embrace the idea of responsible production and consumption. Furthermore, this is possible through the efficient use of natural resources. Therefore, they will be used only when necessary to prevent their depletion.

However, overuse of natural resources is not the only problem. Another severe problem is global food waste. The increase in food waste occurs mainly in the supply chain, which works as follows:

Farm → Transport → Warehousing → Sales → Processing[12]

However, the losses are already in the very beginning, with collecting these foods on the farm. Then there may also be a transport accident. Alternatively, for example, fruits or vegetables may be in stock for too long, and some of them spoil. In any case, before these foods get processed, there are huge losses.

[11] United Nations. *The Essential UN.* New York: United Nations Publications, 2018. p.60 ISBN: 978-9211013726

[12] United Nations. *SDG Indicators – Metadata repository.* [online] ©2021 available from: https://unstats.un.org/sdgs/metadata/ [retrieved 24.03.2021]

This issue is also addressed in goal number 12, and the main target is to reduce these losses by half.[13]

One of the most critical targets is to reduce waste and non-recyclable materials.[14] Currently, non-recyclable waste is a big problem around the world. The production is too large, and the space for storing these materials is decreasing every day. Other chapters of this work will deal with this issue and also the solution.

2.4 Impacts of Covid-19 on the environment

It is terrifying how unsustainably the world is using its natural resources. People need to think about the fact that these sources are not unlimited. The global material footprint is every year bigger. In the year 2010, it was 73.2 billion metric tons. However, in 2017, it was much more extensive, and the global material footprint was 85.9 billion metric tons.[15]

These numbers are indeed a threat and must be addressed immediately. “Material footprint” refers to the number of raw materials extracted to meet final consumption demands.[16] In the past couple of years, the global material footprint is just increasing. Without intervention and resolution of this serious situation, the numbers will only continue to grow. Nevertheless, the pandemic showed that every country needs to develop a good recovery plan in order to build a more sustainable future.

[13] United Nations. *SDG Indicators – Metadata repository.* [online] ©2021 available from: https://unstats.un.org/sdgs/metadata/ [retrieved 24.03.2021]
[14] United Nations. *SDG Indicators – Metadata repository.* [online] ©2021 available from: https://unstats.un.org/sdgs/metadata/ [retrieved 24.03.2021]
[15] United Nations, *Goal no.12 Ensure sustainable consumption and production patterns* [online] ©2021 available from: https://unstats.un.org/sdgs/report/2020/goal-12/ [retrieved 24.03.2021]
[16] United Nations Statistic Division *Shrinking our materiál footprint is a global imperative* [online] ©2019 available from: https://unstats.un.org/sdgs/report/2019/goal-12/ [retrieved 24.03.2021]

The United Nations also has an Environment Programme called UNEP, and this programme aims to protect people. Our population is suffering from the Covid-19 Pandemic, and it will be tough to build everything back together and prevent the countries from future crises.

Before Covid-19, 8.3 billion tonnes of plastic have been produced. 80 % of the waste remains in landfills. We have to consider the fact that it takes 100 years for plastic to degrade in the environment. Each year, people leave 13 tonnes of plastic in the ocean, which causes the death of more than 100,000 marine animals. Moreover, it is not even brighter with water. People prefer to use plastic bottles instead of glass bottles.[17]

Furthermore, that is the reason why 1 million plastic bottles are bought every minute around the globe. However, drinking out of them is not healthy. Studies showed that 90% of bottled water contains plastic particles. These microplastic particles settle down on our organs, causing multiple diseases. The American Chemical Society scientists started research to determine the level of contamination in human organs worldwide. Those microparticles usually are too small for naked eyes. The analytical method enabled them to identify dozens of types of plastic. For example, polyethylene terephthalate (PET), which is known for its use in plastic drink bottles, and also polyethylene which is used in plastic bags. They have made 47 samples and in all of them was bisphenol A (BPA) present. The researchers scrutinized organs likely to contain microplastics like lung, liver, spleen, or kidney tissue.[18]

Furthermore, now, during the pandemic, the situation is not better, but unfortunately worse. The wasting of plastic increased alarmingly, and recycling decreased substantially. The main reason for the increase is the use of plastic

[17] Mashtaq Ahmed Memon, COVID-19 SUSTAINABLE LIFESTYLES FOR PLASTICS AND PACKAGING WASTE MANAGEMENT DURING A PANDEMIC Presentation [online] ©2020 available from: https://ec.europa.eu/environment/international_issues/pdf/01-06%20-%20Mushtaq%20Ahmed.pdf [retrieved 25.03.2021]

[18] Damian Carrington, *Microplastic particles now discoverable in human organs* available from: https://www.theguardian.com/environment/2020/aug/17/microplastic-particles-discovered-in-human-organs [retrieved 25.03.2021]

in medical and packaging. “The plastic demand in the medical sector helps in combating the COVID-19, including the face shield (PP), gown (LDPE), vinyl gloves (PVC), disposable bag, tube, masks (plastic sheet and non-woven fabric), etc.”[19] However, it is not just the medical sector that is affected. Due to lockdown and a variety of restrictions, people are forced to stay at home.

Moreover, that means that many people settled to ordering some food or groceries via delivery services. Furthermore, this increased the number of packaging. Some companies believe that single-use plastic is safer and not infected. And because of those fears and beliefs was plastic recycling back seated not to infect people and because of lockdown. This situation is awful for the environment. The number of plastic waste being dumped in the oceans, seas, and land has multiplied. It has a significant impact on the lives of the animals living in the water and the land, biodiversity, and plantation. According to statistics, about 450 million tonnes of plastic is produced each year, and 12 million ends up polluting the ocean. The UN Environment Programme claimed that if this will not be stopped, there will be more waste than animals over the years in the seas and oceans. As food delivery expanded due to lockdown and government regulations, waste also increased, and Thailand noted that the number of plastic wastes had increased by 15%, producing 6,300 tons of waste per day.[20]

This is an alarming amount of waste that is only found in Thailand. If all the numbers in the world were added, the quantity would be much more significant. The problem, however, is that most of this plastic waste is, as mentioned above, non-recyclable. Thus, it just accumulates in landfills and releases microplastic

[19] Mashtaq Ahmed Memon, COVID-19 SUSTAINABLE LIFESTYLES FOR PLASTICS AND PACKAGING WASTE MANAGEMENT DURING A PANDEMIC Presentation [online] ©2020 available from: https://ec.europa.eu/environment/international_issues/pdf/01-06%20-%20Mushtaq%20Ahmed.pdf [retrieved 25.03.2021]
[20] Mashtaq Ahmed Memon, COVID-19 SUSTAINABLE LIFESTYLES FOR PLASTICS AND PACKAGING WASTE MANAGEMENT DURING A PANDEMIC Presentation [online] ©2020 available from: https://ec.europa.eu/environment/international_issues/pdf/01-06%20-%20Mushtaq%20Ahmed.pdf [retrieved 25.03.2021]

particles into the air, which are harmful to the human body and cause various diseases.

3 Problems with plastic waste in the Czech Republic

Humankind is going through a phase in which people are fighting to decide whether plastic is a friend or an enemy. Plastic affects almost every sector of production.

In the Czech Republic, there are about 2500 companies specialized in plastic processing. It is used mainly for packaging, civil engineering, agronomy, consumer goods, and automotive. However, only half of the plastic is recyclable. That is why many companies are trying to produce more ecologically. Under the word ecological is a hidden excuse to attract the customers' attention in the market with innovations in the form of plastic alternatives, recyclable plastics and the like. That “trying“ leads to competition on the market between various companies in various fields.[21]

The production of plastic materials is one of the most innovative fields in the European Union. The changes encroach every sector, including healthcare. For example, technically precise and antithetically filling and wrapping drug lines switched from the usual white ultra-high molecular polyethylene to premium material. “*Murtfeld plasty”* is a Czech company that produces plastic products for food, beverage, packaging, and pharmaceutical industries and uses unique material because of its good features. For example, for its colour. The light-grey colour allows the producer to see any contamination during production.[22]

[21] Kohoutová, Miroslava, *Jak využít odpad,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]
[22] Kohoutová, Miroslava, *Jak využít odpad,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

The food industry is also affected. The big topic, in this case, is ecological design or so-called eco-design. Companies are trying to design the packaging of their products so that they constitute the least possible burden on the environment. They are removing the unnecessary plastic as shrink foils made of PVC, with which the plastic bottles are covered.[23]

Moreover, during innovation, the companies must deal with very high demands on using of plastic materials. Currently, only one mechanically recycled material can be used to produce articles for food contact, and it is called rPET. The producers need to prove that into their material enter only PET bottles, in which they filled just beverages before. The material mentioned before is made of recycled PET bottles, which are crushed into small pieces, then cleaned and subsequently remelt into granulate, of which the bottles are made again. Bottles recycled that way have almost the same characters as primary plastic, and we can spot the difference only in colour. The recycled bottles have dark tones.

The company called *"Nafigate Corporation"* came with a brilliant idea. They created so-called "Hydal technology" in cooperation with Technical University in Brno. This brand-new technology enables changing one litre of used frying oil to 0,7 kilograms of unique polymer, of which Bio-plastic is made. This is possible to provide with the help of bacteria. The bacteria are keen on living, so it develops the ability to eat raw materials and changes them into energy reservoir. It eats frying oil, and afterwards, similarly to the conversion of fats in the human body, this bacterium converts the fats from the oil into polymer P3HB. When bacteria end their mission, the polymer eats the other microorganisms. So, nature creates and also eliminates the polymer P3HB by itself.[24]

[23] Kohoutová, Miroslava, *Jak využít odpad,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]
[24] Kohoutová, Miroslava, *Jak využít odpad,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

3.1 Non-recycling fee

The issue of plastic waste should be solved. That is why the European Union has also joined in the solution, motivating all Member States to change and help for a sustainable future.

The European Union is introducing a new tax with effect from the New Year. Since 1st January 2021, all member states shall begin to pay a fee of 80 cents for each kilogram of non-recycled plastic. According to the Ministry of the Environment's appraisal, the Czech Republic will pay two billion Crowns a year to the European budget. The Czech government and also the other member states agree with the implementation of the plastic tax. The prime ministers of member states of the European Union, including the Czech Prime Minister Andrej Babiš, agreed on implementing this tax at the meeting in June, which took place in Brussels. They believe that implementing a tax on non-recyclable plastics is reasonable for better recycling and managing resources. This can be a good motivation for companies that do not recycle their plastic waste today. These companies are starting to be in the minority, as the economy goes hand in hand with sustainability. But it can also be a misstep by the European Union, as not everyone agrees with the new European legislation. Implementing the tax could lead the Member States to “hide” plastic wherever it would be possible.[25]

Furthermore, because fewer plastics appear in landfills, the Czech Republic will pay less money to Europe. This may result in the search for the simplest possible recycling of plastic, which can be carried out in the immense possible amount, and at the same time, it will still be legally considered as recycling. Recycled plastic will be then used mainly in construction materials such as asphalt. As a result, it will only lead to the search for ways to dispose of plastic waste cheaply and legally instead of material recovery in the circular economy.

[25] Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

The European Plastics Converters-EuPc is very sceptical about the tax introduction due to the lack of a link between the tax and the circular economy sector. Revenues from the European non-recycled plastic tax are not intended for investments in waste management and recycling infrastructure, so its introduction will not increase recycled plastic waste. Implementing the tax could lead packaging producers to use alternative materials instead of plastics, which could have a similar or even more negative impact on the environment than plastics currently have. It can also happen that the setting of the fee will lead to falsification of statistics on the amount of non-recycled plastic waste in the country. Therefore, the European Parliament has called on the European Commission to establish control mechanisms to prevent the numbers' counterfeiting.[26]

The European tax on non-recycled plastic is nothing new. First, it was supposed to be one way to reduce the amount of unusable plastic waste in the EU. However, there was a lack of political will to implement this. But then there was a referendum on Britain's departure from the European Union. As Britain was one of the most significant contributors to the European Union's budget since 2016, the Union has had to think about how to "cover" this hole in its budget. Suddenly the proposal of a seven-year budget plan was put forth, including the implementation of this tax. The crisis with Covid-19 has contributed to the enforcement of the draft legislation. It is necessary to eliminate the budgetary slump and mitigate the effects of the Coronavirus crisis. The Union has borrowed over 20 trillion Crowns on the financial markets to help member states. This debt will need to be paid off, and the new budget resources should just help. The debt relief is expected by 2058. The Czech Republic succeeds in recycling plastics, which is why the Ministry of Finance estimates that thanks to the tax, the country will pay less money to the EU budget than under normal circumstances, i.e., based on criteria calculated from Gross National Income.

[26] Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

However, these charges will be capped so they will not ruin less developed European states. The fee for this tax will be paid to the Union by the states and not the companies that produce plastic packaging. But it would be suitable for the State not to pay this tax and leave the payments to actual companies that do not recycle their waste.[27]

According to data gathered from Eurostat, less than half of all plastic packaging is recycled in the European Union. While in 2005, the member states of the Union recycled only 24 % of plastic packaging, in 2017, it was 42 %. It is expected that with the implementation of the new tax, Member States will seek to improve their waste management. The Czech Republic manages to recycle more than half of all sorted plastic, making it one of the best countries that recycle. It, therefore, ranks fifth place, just after Lithuania, Bulgaria, Cyprus, and Slovenia. These countries will pay the lowest tax on non-recycled plastic. In September, the Chamber of Deputies discussed new waste legislation which should support recycling. The laws introduce two new tools that should help the country increase the proportion of recycled plastics.[28]

The first is a gradual increase in the landfill fee. The most used method of waste disposal in the country is landfilling. The best way how to prevent landfilling is to increase the price of landfills. The resources are no longer used there, and at the same time, it has a lot of negative externalities. Such as the release of dangerous gases or combustion and contamination of groundwater. Landfills should also be relieved by a new law prohibiting disposable plastic products. As is apparent from the European Union requirements, plastic cutlery, plates, straws, and other disposable items should be prohibited. The deputies believe that as long as it is cheaper to dump waste than to sort it and use it, the recycling industry will not develop. The second tool is the so-called eco-modulation. It is an economic tool that favours easily recyclable materials in terms of packaging

[27] Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

[28] Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

fees. As a result, producers will make packaging that is easy to recycle and recover.[29]

3.2 Biopolymers and microplastics in the water

The fact that plastics are dangerous to the human body has been discussed in various sources, but the interview below shows another perspective.

According to the interview with Jan Merna, Associate Professor in Macromolecular Chemistry at the Institute of Polymers on Faculty of Chemical Technology at the University of Chemical Technology, Prague, he claims that we should not be afraid of plastics. When handled sensibly, they are not dangerous at all. Plastics began replacing traditional materials in the 1950s, and thanks to that, they received a negative label due to their stability. However, humanity has taken advantage of these properties. It now uses them as stable polymers where stability is not essential, such as packaging materials, PET bottles, or various polyethylene and polypropylene materials. In the case of these products, they do not have to last 50 years or more, as they become waste for us after a few days. In developed areas of the world, however, plastic waste is efficiently collected and processed. Polymers are generally very stable substances. The plastics we come in contact with are pretty inert materials and therefore do not have a toxic effect on the body. Some are used directly as implants in the human body. For example, as joint replacements made of polyethylene. This material is practically identical in structure to microtone bags or plastic bags.[30]

[29] Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

[30] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

However, the consumption of plastics brings big problems, especially in less developed countries of the world. About 40 % of plastic products that we use as packaging quickly become waste. About 350 million tonnes of polymers are produced annually worldwide. In this case, it is a severe global problem. Petroleum is extracted about ten times as much, so its primary use is not for polymers' production, but we burn it in the form of fuels. In any case, the share of plastics in petroleum consumption is growing, and in 2050 it could be over 20 %. We primarily use plastics in such a way that the waste is generated only after years of use. Today, we would hardly be able to imagine life without plastics. We use them every day, without exception. Imagine a typical day in our lives. When we get up, we lie on a foam mattress. We clean our teeth with a plastic brush. Then we dress in clothes that, in addition to natural cotton fibres, also contain fibres from synthetic polymers, which add crease resistance to them.[31]

Furthermore, we are only at the beginning of the day and only with a few activities. Today it is a matter of course that polymers are used in everyday life. They are excellent thermal and electrical insulators. We insulate buildings or cables with them. This application saves a tremendous amount of energy and enables the massive development of electrical engineering. They also function as semiconductors, for example, producing organic LEDs of various displays or in the production of solar panels.

Jan Merna also tries to develop the catalysts necessary to prepare specific polymers such as polyethylene or polypropylene. Scientists have been looking for materials that would serve as packaging, but in nature, unlike plastics, they would quickly decompose—for example, materials such as paper. However, Merna is not at all a proponent of the massive use of biodegradable plastics. He claims that biodegradable plastics' main problem is that, even if it decomposes into harmless substances such as carbon dioxide and water, the energy contained in it disperse unusably. We can imagine such a decomposition as

[31] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

slow combustion when a prolonged release of heat cannot be used technically well. Even in an ideal compost environment, these polymers decompose from weeks to months, but they will be as stable as conventional petroleum-based synthetic polymers in an unsuitable desert environment.[32]

Another problem is the production of these materials. It is heavier on energy than in the case of the most common classic plastics. Merna seeks to alleviate the second problem by developing catalysts that provide as effectively as biodegradable polymers. He uses renewable raw materials for production, ideally waste products, such as carbon dioxide, produced in every combustion process. According to him, however, the whole idea of biodegradable plastics as some next-generation materials is problematic, for which we do not have to bother with their disposal. It suppresses the human culture we have been learning from an early age, that it is not customary to throw plastic bags or cans behind a house on the street or into a river, but that it belongs in the trash. If in our part of the developed world this consciousness is and the waste collection system works here, then biodegradable plastics in the field of packaging are losing their significance. If we are able to collect them, we can partially sort them and further use them instead of letting them disintegrate uselessly. In less developed countries, the plastics were not sorted, and they ended up at least in mixed waste is not a significant problem either. It ends up either in a landfill or travels better to an incinerator, where it releases its original energy, and we get heat from it. Plastics are not perfectly stable. Without the additives we call stabilizers, they degrade over a more extended period of months and years.[33]

A sufficient example is intentionally not stabilized thin-walled films used as packaging. Gardening foils are made of similar material. These materials begin to disintegrate over a period of time. The decay is mainly solar radiation, which

[32] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]
[33] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

has enough energy to cause the cleavage of bonds in polymers. If a polyethylene bag is buried in the ground or stored in a landfill without sunlight, it may survive for hundreds of years. However, due to its properties, it does not do much damage there. However, if it remains on the surface and is hit by sunlight, it decomposes into larger pieces relatively quickly. Within a few months, the flying bag turns into macroparticles, and we do not even have to know that they come from the bag. Furthermore, they will decompose into microparticles, nanoparticles and will eventually oxidize completely. Although the process mentioned before takes longer, nature can handle plastic.[34]

There are three ways to dispose of plastic waste. It can be taken to the landfills. But then it will lie there. In developed areas, people try to back away from it. It can also be recycled, which has limitations for plastics because we cannot sort them out perfectly or it is not economical. On average, we can in Europe process 30 to 40 % of polymer waste into new material. The third and also last option is to use the waste energetically. That means burning it or, even better use pyrolysis, the thermal decomposition we do with petroleum to obtain raw material for plastic production. In addition to energy, pyrolysis of polymer waste can also provide some raw materials for the re-production of plastics. In some countries, landfilling is already forbidden, and all waste is therefore reasonably used for producing recycled polymers or energy. The Czech Republic is one of the best in material recycling, but we still dump a lot. However, this will change the legislation of the European Union, which will significantly reduce landfilling.[35]

Jan Merna claims in an interview that he does not currently see the application of bioplastics on a massive scale, such as packaging. But they can serve as mulch films or systems for the natural dosing of fertilizers or pesticides. These polymers can also be used well in medicine. Due to the small production

[34] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]
[35] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

volumes, there is no need to solve energy intensity at all, and it does not matter how we produce them. Polymers are not just synthetic materials, and many of them have a natural origin. Cellulose, proteins and DNA have a polymeric structure. That means that they form, like synthetic polymers, giant molecules-macromolecules, which are several orders larger than, for example, the molecules of sucrose, with which we sweeten our coffee. Polymers are, therefore, the basis of all living organisms. In general, the macromolecules' size gives the polymers good properties and allows them to be used as materials. For example, paper, based on cellulose, is also a polymer material of natural origin and so-called bioplastic. Nature is usually able to cope with materials that it produces and can also eliminate them. Man can imitate such materials and synthesize them artificially or use microorganisms that can produce them biochemically. For example, polyhydroxybutyrate (PHB) is produced that way, producing bacteria at the time of nutrient uptake as its sufficient material. We can use it as a material because this polymer has properties close to polypropylene. The problem with this biochemical process is that producing such a biopolymer requires not only some raw material (bacteria can be fed with waste) and energy. Moreover, the output is, as with any process, in addition to the desired product, also waste in the form of CO_2 emissions or wastewater. Unfortunately, we currently use more energy to produce this degradable polymer than with a petroleum-based synthetic polymer. Another degradable polymer that is beginning to be used is polylactic acid (PLA), which has similar side effects. However, we would not help the planet much with the massive production of bioplastics. Market principles work in this area, and the ecology of production dictates its costs. Before there is any effective technology, these materials remain very marginal. It currently makes up less than half a per cent of plastics.[36]

[36] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

Moreover, these intentionally fewer resistant bioplastics are not suitable for recycling, will degrade faster than petroleum polymers. Achieving suitable properties with the resulting recycled material will be even more complicated than with the petroleum-based polymers used so far. It is not easy to sort individual types of plastics, and when biodegradable plastic packaging gets as an admixture even in small amounts to the predominant, synthetic ones, a large amount of material is often degraded. But if it is possible to collect bioplastics, we do not need them. Because we can also collect non-degradable plastics, and in addition, we have a chance to use them more easily. Reusable cups and mugs are also justified in this context. Currently, many plastics are used, mainly in packaging. Sometimes we overuse plastics unnecessarily by packing already packaged products. Of course, we can also use an ordinary PET bottle several times. It is not necessary to buy new PET bottles every time. Every bottle must be wholesome, and BPA (bisphenol A) cannot be present there.[37] "BPA is found in polycarbonate plastics and epoxy resins. Polycarbonate plastics are often used in containers that store food and beverages, such as water bottles. They may also be used in other consumer goods."[38]

Three hundred fifty million tons of polymers are produced worldwide, and it is estimated that 8 to 13 million tons flow into the ocean in the same period. Due to their stability, plastics remain in the water, and they will accumulate and disintegrate, so the occurrence of plastics all around us will persist into the distant future. We know that plastic is not harmful, but we do not know if certain toxic substances or harmful organisms' growth can bind to it and concentrate on it. The plastic would then act as their carrier. However, particles from other materials may work similarly. Simultaneously, we hear a lot about the microparticles of plastic. But this is not anything new. We have been living with plastics for 70 years, and the first mention of microparticles comes from 1974.

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[37] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

[38] Brent A. Bauer, M.D., *What is BPA, and what are the conceerns about BPA?* [online] available from: https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331 ©2019, 18.12.2019 [retrieved 02.03.2021]

The World Health Organization does not currently recommend monitoring the content of microplastics in drinking water. Thanks to the media, this is a topic that has attracted the attention of many scientists. Also, thanks to this popularity, much research is being done on this topic. But several studies show that the particles cannot penetrate the digestive tract into tissues and pass through the human body without accumulating. But the truth is that there are a lot of particles of different materials around us. Now only plastic particles attract attention. Only the future will show if they are that dangerous.[39]

3.3 SDGs in the Czech Republic

According to the Framework of Programmes on Sustainable Consumption and Production in the Czech Republic, which is available on the webpage of the Ministry of the Environment of the Czech Republic, the government is trying to educate people and companies to create a modern consumption-oriented society, which is also one of the targets of the Sustainable development goal number twelve. Due to their importance, the objectives will be quoted in full.

“It is necessary to strive towards a society that will:

- achieve highly effective production and competitiveness by optimally reducing the material and energy intensity of the process;

- develop an industrial economy based on renewable resources and on maximum use of secondary materials recovered from waste;

[39] Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny – komerční příloha: Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

- provide products that have low requirements in terms of consumption during their life cycle and are easily used as waste, thus contributing to the closure of material flows;

- substantially reduce its dependence on primary and non-renewable raw materials, in particular on fossil fuels and their import;

- make a massive investment in technological innovation and research & development; - continue its efforts to decouple economic growth from the environmental degradation, mainly in areas where the two have not been absolutely decoupled;

- be able, in the interest of a better quality of life, to extend economic analysis related to its decision-making to cover the entire system of production and consumption, including any undesirable adverse impacts on the quality of life;

- satisfy its basic needs (energy, water, food) by effective products and foodstuffs made of safe substances and materials, with an emphasis on quality, health and environment.“[40]

[40] Ministry of the Environment of the Czech Republic, *Framework of Programmes on Sustainable Consumption and Production in the Czech Republic* [online] available from: https://www.mzp.cz/C125750E003B698B/en/frame_work_scp/$FILE/OPZP-SCP_Framework-20081216.pdf [retrieved 06.04.2021]

PRACTICAL PART

Glossary

A crucial part of the practical part of this work is the glossary below. It is in alphabetical order and contains 59 words and phrases often used in chemistry, biology and other scientific fields. That means that in this glossary were used terms that are professionally experienced and with a precise purpose for the chemical or technological production process.

The structure of the glossary is as follows:

- in the first column is a word or phrase in English
- in the second column is a Czech translation of the given word or phrase

Several dictionaries were used when translating the given expressions from English into Czech. Among the most used includes the English-Czech and Czech-English dictionary of analytical chemistry in an online version. This dictionary comes from the publishing house of the University of Chemical Technology in Prague.[41]

Various translation methods were used when writing the thesis and also when compiling the glossary. Knittlová mentioned in her book[42] Joseph L. Manole's nine methods of translation which are: *equality, substitution, divergention, convergence, amplification, reduction, diffusion, condensation and reordering*.

According to Malone, the author of the thesis used the following translation procedures:

[41] Matějka, Pavel a kol., *Slovník analytické chemie,* Vydavatelství VŠCHT, Praha [online] ©2005 available from: http://147.33.74.135/knihy/uid_es-004/index.html [retrieved 11.04.2021]

[42] Knittlová, Dagmar, *K teorii i praxi překladu,* Olomouc: Univerzita Palackého, 2000, [online] available from: https://ndk.cz/view/uuid:27383d00-7b98-11e4-8ce5-005056827e52?page=uuid:74ffe000-c798-11e4-a640-5ef3fc9ae867 [retrieved 20.04.2021]

- **Condensation (A/B:AB)**
  Environment=životné prostředí
  In English is this text shortened, but in Czech, we have to use the phrase to express the word and leave the same meaning
- **Reduction (AB: A)**
  foaming agents=pěnidla
  omission, in order to translate and better understand the meaning of the word
- **Cognates-**words that look similar and also have the similar meanings
  upcycling=upcyklace
  vermicompost=vermikompost

ENGLISH	CZECH
Additives	Přísady
Adulterated	Padělané
Bedding material	Podestýlka
Beekeeping	Včelařství
Biodegradable plastic	Biologicky-rozložitelný plast
Biologically derived polymers	Biologicky odvozené polymery
Catalysts	Katalyzátory
Circular economy	Oběhové hospodářství
Climate change	Klimatická změna
Closed-looped solution	Uzavřené řešení
Coexistence of man and nature	Soužití člověka a přírody
Conventional plastics	Konvenční plasty
Decompose	Rozložit
Deoxygenation	Deoxygenace
Depolymerization	Depolymerizace
Derivatives	Deriváty
Developing countries	Rozvojové země
Disposable	Jednorázový
Dissolving	rozpouštění

Ecological footprint	Ekologická stopa
Endanger	Ohrozit
Environmental impact	Zásah do životního prostředí
Environmental impact	Zásah do životního prostředí
Environmental protection	Ochrana životního prostředí
Enzymatic recycling	Enzymatická recyklace
Enzyme-based	Na bázi enzymu
Epoxy resin	Epoxidová pryskyřice
Financial instability	Finanční nestabilita
Fossil-fuel subsidies	Dotace na fosilní paliva
Incineration	Spalování
Industrial foaming agents	Průmyslová pěnidla
Landfills	Skládky
Lightweight materiál	Lehký materiál
Microplastic particles	Částice mikroplastů
Milennium Development Goals	Rozvojové cíle tisíciletí
Mocrotone bags	Mikrotenové sáčky
Molecular recycling	Molekulární recyklace
Natural resources	Přírodní zdroje
Non-recycable	Nerecyklovatelné

Non-vowen fabric	Netkaná textilie
Oxidize	Oksyličovat
Paraffin kindling	Parafínový podpal
Petroleum-based	Na bázi ropy
Process of reverse osmosis	Proces reverzní osmózy
Pyrolisis	Pyrolýza (spalování)
Raw materials	Suroviny
Repurposed	znovupoužitelný
Retrieval of monomers	Získávání monomerů
Scrutinized organs	Prověřené orgány
Single-use plastic bottles	Plastové lahve na jedno použití
Styrofoam	Polystyren
Sustainable Development Goals	Cíle udržitelného rozvoje
Sustainable future	Udržitelná budoucnost
Sustainable shopping	Udržitelné nakupování
Thermomechanical recycling	Termomechanická recyklace
To live waste-less	Žít bezodpadově
Ultra high-molecular polyethylene	Ultra vysokomolekulární polyethylen
Upcycling	Upcyklace
Vermicompost	Vermikompost

3.3.1 Association of Social Responsibility

This is the most extensive corporate social responsibility (CSR) initiative and Sustainable Development Goals (SDGs) in the Czech Republic. This initiative's vision is to make social responsibility and sustainability a natural part of business and every organization in the Czech Republic. It connected companies, the public sector, and educational institutions under one roof. Thanks to that connection, it is possible to make the maximum contribution to creating a more responsible society. They teach society to naturally strengthen responsibility for the place and planet we live in. Also, hold a regular conversation with the government about the responsibility and sustainability of the society. Association of Social Responsibility is the pioneer of the Sustainable Development Goals (SGDs) in the Czech Republic. Since 2017, they have been awarding the prestigious SDGs Awards. This is a unique award for fulfilling the UN's global goals in the Czech Republic. This has become a model for other countries and inspires the whole world. With developing the culture of giving in the Czech Republic, they collected over 73 million CZK for charitable projects in 2020. Since the year 2016, they have been covering "The Giving Tuesday," which is World Donation Day.[43]

3.3.1.1 Frusack

The idea of Frusack was born in 2014. In this year, sustainability was not a frequently used word. Climate change is one of the biggest global threats, and disposable plastics endanger life in the oceans. Despite the significant progress on recycling, the production of plastics is increasing year by year. Microtone bags are useless. Up to 400 of them are consumed a year. That means that in

[43] Asociace společenské odpovědnosti, *O Asociaci,* [online] available from: https://www.spolecenskaodpovednost.cz/o-asociaci/ [retrieved 07.04.2021]

the Czech Republic are over 4 billion pieces are used a year. People use one of these bags for an average of 20 minutes and then throw it in the sorted waste. However, the microtone bags are not recyclable. They are made of low-quality plastic, which cannot be used further. They end up in landfills, and from there, they can quickly get into nature. Usually, they are made of low-quality polyester and transported from Asia. Those bags end up in the Czech Republic, and you can buy them for 9,90 CZK. This is the so-called recipe for a "sustainable" business. It is profitable and more accessible to produce like this, but it would also harm the environment and have nothing to do with sustainability. Instead of doing shoddy work, this company joined forces with experts. They developed a solid material of 100% PLA compostable fibre based on vegetable starch without added additives and petroleum. This fibre is made in Switzerland and then knitted and sewed in the Czech Republic in Frusack workshops and then sent to people.[44]

Sustainable products make sense only if they are produced gently and ethically. This company produces in Europe under fair conditions and claims that it is in daily contact with the workers. They are also trying to provide the best working environment for them. So, the sewing of Frusack is now taking place in the heart of Pálava.[45]

It is not made of polyester but compostable fibre based on corn starch. The material does not contain any other additives that are typically added to the PLA, which is checked by Technical University in Brno. It will decompose in 8-12 days in an industrial composting plant. However, recycling is not available everywhere. Moreover, that is why Frusack and Technical University in Brno also started developing a recycling system. If people do not have a brown bio-waste bin on hand and do not want to throw Frusack in mixed waste, you can send it back to the company to take care of its careful disposal or further use.

[44] Frusack, *O Frusacku* [online] ©2020 available from: https://frusack.com/o-frusacku/ [retrieved 07.04.2021]

[45] Frusack, *O Frusacku* [online] ©2020 available from: https://frusack.com/o-frusacku/ [retrieved 07.04.2021]

Nevertheless, the most crucial information to remember is that Frusack does not belong to sorted plastic. Frusack was created to help reduce the amount of disposable waste.[46]

3.3.1.2 Upcycling of glass

SRNA is an ecological project that deals with glass recycling using traditional glassmaking methods. They are transforming glass into an original design. All of their products are handmade and with the idea of sustainable development. They turn waste into a product that people value, which can serve them in their households. Each piece of product is made separately from a different bottle with an emphasis on quality. This is creating unique and unrepeatable pieces. The resulting design is based on the shape of the original bottles. The approach of SRNA to them is based on minimalist aesthetics. They believe that their work contributes to the importance of improving the conditions for the coexistence of man and nature. They are also connecting this idea with the design of their glass products. The reuse and recycling of waste material should become a regular part of everyday life. [47]

3.3.1.3 Scuk.cz

Scuk.cz supports the local economy and gives space to small and medium-sized farmers. It supports local resources and production and believes in a mission of sustainable shopping without waste with maximum respect for the environment and animal welfare. They know that the offer of local growers, farmers, and

[46] Frusack, *O Frusacku* [online] ©2020 available from: https://frusack.com/o-frusacku/ [retrieved 07.04.2021]
[47] SRNA, *O nás* [online] ©2019 available from: https://srna.cz/o-nas/ [retrieved 07.04.2021]

producers is rich, and people do not have to eat food that travelled thousands of kilometres. Farmers can set the for the products at their discretion. The project is based on the concept of neighbourhood communities. There are shopping groups that create bulk orders, and so the transportation costs are reduced and the environmental impact. People can choose the neighbourhood close to their home, and after the purchase is completed, they can pick up their products at drop points on a particular day.[48]

There are many exciting products on Scuk.cz, and everything is in the spirit of organic and responsible production and consumption. And when it comes to plastics, this company strives for the utmost canniness and supports start-ups with similar vision. One such start-up is “Element-lighten your life”. Element is a new brand that produces healthy desserts. These are raw, vegan, without allergens, nuts, gluten, lactose, and sugar-free. To substitute the refined sugar, this company uses mixed bananas, dates, and agave. The composition of the products is entirely natural. For example, the most popular chocolate dessert contains only bananas, unroasted cocoa, agave, coconut oil and cherries.[49]

Nevertheless, the most interesting is the packaging because it is not made of plastic. All of the products are delivered in compostable packaging made of corn starch, which is degradable. These desserts can be frozen for up to three months and will retain their quality and freshness. But once you take the dessert to the fridge, you must consume it within 5-6 days. These products are primarily made for gluten-free people and also for people struggling with diabetes and lactose-intolerants. These products can also be interesting for people with a healthy lifestyle and young people oriented towards alternative ways of nutrition. “Element” takes into account that not everyone can afford products with a bio-

[48] Scuk.cz, *My jsme Scuk,* [online] ©2020 available from: https://www.myjsme.scuk.cz/ [retrieved 07.04.2021]

[49] Scuk.cz, *Element v Manětínský Scuk* [online] ©2020 available from: https://www.scuk.cz/manetin/vsechny-produkty?fbclid=IwAR20pbkbRhuLvONjShb6yrhFvNa1_OlpJ_gFCUv8_BnKmtnRpCwOY0JbYBw&ref=PRODUCT_SELLER_PAGE&f=eyJzZWxsZXJIYXNoZXMiOlsickpNcnduTjZYIl19 [retrieved 07.04.2021]

certificate. Obtaining this certificate is difficult and expensive, and this is also reflected in the price of the products. That is why they try to sell their desserts at a price that everyone can afford. But most of the raw materials are still in bio quality.[50]

As mentioned earlier, microtone bags are of poor quality and non-recyclable and endanger life in the oceans and nature. Scuk.cz is aware of this, which is why it came up with a revolutionary idea. It developed bags that are 100% compostable. The secret of those bags is corn starch, similar to “Element” dessert cups. It is made of materials based on corn starch, making them 100% compostable and environmentally friendly. If it is handled properly, it will decompose within 90 days, or people can reuse it for up to two years. And will not leave any microplastics or harmful substances behind because it does not contain them. It is best if we put this bag on the compost after use. The compost contains ideal moisture and the bacteria needed for the decomposition of compostable bags. In addition to classic compost, people can use vermicompost.“Vermicompost is the product of earthworm digestion and aerobic decomposition using the activities of micro- and macroorganisms at room temperature. Vermicomposting, or worm composting, produces a rich organic soil amendment containing a diversity of plant nutrients and beneficial microorganisms.”[51]

3.3.1.4 Tierra Verde

The Tierra Verde brand was established 13 years ago when organic drugstores' interest was not as widespread today. Tierra Verde, which translates as a “green country,” was inspired by the people of India and Nepal, who use soap nuts to

[50] Element, *O nás* [online] ©2019 available from: http://element-cz.com/#o-nas [retrieved 07.04.2021]
[51] Rick Carr,*Vermicomposting for beginners* [online] available from: https://rodaleinstitute.org/science/articles/vermicomposting-for-beginners/ ©2016, 06.01.2016 [retriever 27.4.2021]

wash and clean their bodies. They use raw materials mainly from the Czech Republic and import only what is not grown here. They pay attention to the least possible burden for human health and nature for all raw materials. When importing, however, they think mainly of leaving as tiny an ecological footprint as possible. Therefore, several products have various international certificates such as Ecogarantie, GOTS, or PEFC. This company works on true eco principles, which means on the principles of genuinely ecological life. They have chemical minimalism in the products' composition, which means that the products do not contain petroleum derivatives, synthetic perfumes, dyes, industrial foaming agents, or irritating anionic surfactants. However, they examine the root of environmental problems and also find solutions. They have returnable canisters, buckets, and a whole service system for bottling plants based on the original containers' reusability. It means it is genuinely wrap-free.

People have the opportunity to add eco-drugs and eco-cosmetics to their own bottles in more than 300 stores in the Czech Republic and Slovakia. Thanks to upcycling, almost no waste is generated in production. Covers for notebooks, bags, and envelopes are therefore created from packaging waste. Moreover, for this reason, in addition to the drugstore, it is possible to find their household products such as bags and nets made of organic cotton, wooden brushes, organic cotton cosmetic tampons, bamboo sticks for cleaning ears, wooden combs, and many others. Tierra Verde enjoys handicrafts. He also tries to make the work environment pleasant so that work is a joy for everyone. Each product passes through the hands of many people. This company is based in Brno where every customer can go visit the showroom.[52]

[52] Scuk.cz, *Tierra Verde: I malou změnou snížíte svou ekologickou stopu* [online] ©2021, 30.03.2021 available from: https://www.blog.scuk.cz/post/rozhovor-tierra-verde [retrieved 07.04.2021]

3.3.1.5 Jsem Zero Waste

This company has developed ecological packaging that replaces plastics. Their products Wrapík and Nepytlík are made of organic material. Thanks to a protective layer of natural beeswax, it is only slightly breathable and will keep the food fresh. Thanks to the specially developed machine invented by Moravian engineers, the wax is applied evenly. This beeswax comes from traditional beekeeping in South Moravia, and it is 100% natural without any additives as jojoba oil or synthetic paraffin from oil. It can be used to cover a bowl full of food instead of the usual plastic foil. The shape is easily achievable by forming a Wrapík with the heat of hands. It softens at 25 ° C. In short, people can use Wrapík and Nepytlík whenever they would use a plastic bag. [53]

The beeswax is not always natural. Most of the time, it is covered with synthetic paraffin. Due to the high demand for wax, it is necessary to import it from other countries. As is well known in Asian countries such as China, the approach to output controls of goods and products is somewhat different than in the Czech Republic. Furthermore, it often happens that beeswax is adulterated with paraffin. There have been even cases of staining paraffin yellow and adding honey scent.[54]

Wrapík and Nepytlík are made of materials that decompose in nature. You can also compost it. It takes six months to 100% cotton canvas and four months for the paper to decompose. This period is much shorter when compared to the plastic bag, which decomposes in 25 years.[55]

However, the most interesting is the multifunctionality of these products. It is possible to reuse them up to 160 times. When they start to wear out, just add

[53] jsemzerowaste.cz, *Wrapík a Nepytlík číslo 1. na českém trhu* [online] available from: https://www.jsemzerowaste.cz/ [retrieved 12.04.2021]
[54] beeinfo.cz, *Jak poznat pančovaný včelí vosk?* [online] ©2017, 17.01.2017 available from: https://beeinfo.cz/jak-poznat-pancovany-vceli-vosk/ [retrieved 12.04.2021]
[55] jsemzerowaste.cz, *Wrapík a Nepytlík číslo 1. na českém trhu* [online] available from: https://www.jsemzerowaste.cz/ [retrieved 12.04.2021]

wax shavings to them and heat them in the oven. They can also be used to start a fire in a fireplace or campfire. It burns much longer than a classic paraffin kindling. But when these products are really at the end of our lives, we can put them on compost.[56]

4 Carbios and other companies

Carbios is a French company that focuses on the field of biochemistry. It was established in 2011, and today it earns a considerable number of patents. The primary mission of this company is to provide a solution to the recycling of plastics and textiles. More specifically, PET bottles, trays, and textiles made of polyester. The process consists of introducing enzymes into plastic and textile materials to make them biodegradable. These enzymes will allow the PLA to be 100% biodegradable. This solution is innovative, and it is applied in the form of an enzyme-based additive known as Evanesto®. By the research provided by the company named Carbiolice, 52% of the produced plastics end up in incineration, landfills, or nature. To ensure zero waste, Evanesto® was invented as an eco-responsible alternative to some substances that plastic contains. Plastics that contain this alternative are processed as bio-waste and transformed into compost within 200 days. “This solution makes it possible to fight against the plastic waste accumulation in the environment and becomes an effective lever to deploy a high-performance solution for on-site sorting of wastes.”[57] In the picture below, we can see the whole process of producing bioplastics containing Evanesto® until their extinction. [58]

[56] jsemzerowaste.cz, *Wrapík a Nepytlík číslo 1. na českém trhu* [online] available from: https://www.jsemzerowaste.cz/ [retrieved 12.04.2021]
[57] Carbiolice, Evanesto® Inside, *What if your yogurt pot turns into compost?* [online] ©2020 available from: https://www.carbiolice.com/en/evanesto-inside/ [retrieved 07.04.2021]
[58] Carbiolice, Evanesto® Inside, *What if your yogurt pot turns into compost?* [online] ©2020 available from: https://www.carbiolice.com/en/evanesto-inside/ [retrieved 07.04.2021]

Picture 1 Evanesto zero-waste process [59]

As mentioned before, Carbios is the owner of many patents. One of them is enzymatic recycling. This innovative process uses an enzyme capable of specifically depolymerizing the PET (polyethylene terephthalate) contained in various plastics and textiles. Currently, the thermomechanical recycling processes have some limitations as only clear plastic can be recycled, and in the final consequence, it is not easy to obtain new products from 100% PET. So complex plastics and soiled plastics are difficult and almost impossible to recycle. The invention of Carbios allows recycling of all types of PET waste and the production of 100 % recycled and 100% recyclable PET products. And all without loss of quality. It works that way. “The monomers resulting from the depolymerization process are purified to be re-polymerized into a PET of a quality equivalent to the virgin PET obtained from the petrochemical industry. The unique process that we are developing allows infinite recycling of these materials, whether clear, opaque, complex, or of textile origin (polyesters), to

[59] Carbiolice, Evanesto® Inside, *What if your yogurt pot turns into compost?* [online] ©2020 available from: https://www.carbiolice.com/en/evanesto-inside/ [retrieved 07.04.2021]

produce new materials. This is the first organic approach allowing PET plastics and textiles to be recycled infinitely according to a circular economy principle."[60] Today, Carbios has already unveiled many ways of producing plastics, and in 2020 it can boast the first produced PET bottle from recycled textiles.[61]

Among biologically derived polymers, PLA is currently one of the most promising on the market due to its remarkable properties to satisfy a wide range of applications." On an industrial scale, current processes for the production of PLA require an expensive intermediary step consisting of the condensation of lactic acid (oligomerization and cyclisation) into a lactid (a cyclic diester). This intermediary component must then be purified and chemically polymerized to obtain PLA." The technological breakthrough brought by CARBIOS interrupted this step. And now, with even greater competitiveness, it produces a high molecular weight homopolymer PLA directly from lactic acid. "The technologies applied to the production of PLA could also be used for the production of other biopolymers, notably other polyesters like polyhydroxyalkanoates (PHAs). This market, currently a low-tonnage market, has an estimated growth potential of 28% between now and 2018 and addresses the same concerns as PLA production: produce a bioplastic that is competitive with conventional plastics in terms of cost and performance and will limit the use of fossil- and food-based resources."[62]

[60] Carbios, *Enzymatic recycling: removing the constraints of current processes* [online] available from: https://www.carbios.com/en/enzymatic-recycling/ [retrieved 07.04.2021]
[61] Carbios, *Enzymatic recycling: removing the constraints of current processes* [online] available from: https://www.carbios.com/en/enzymatic-recycling/ [retrieved 07.04.2021]
[62] Carbios, *Carbios opens a new biological pathway with one-step PLA production process* [online] ©2016, 16.07.2016 available from: https://www.carbios.com/en/carbios-opens-a-new-biological-pathway-with-its-one-step-pla-production-process/ [retrieved 11.04.2021]

4.1 Infinitely recyclable plastic

According to the article published in the journal Nature Chemistry, a team of researchers developed a type of plastic that is infinitely recyclable. “The plastic, poly(diketoenamine), or PDK, could provide companies with a closed-loop solution, meaning raw materials can be infinitely reused, to the global problem of plastic waste by dramatically improving global recycling rates.”[63] Simultaneously, it is estimated that only 9% of the plastic produced worldwide is recycled. Most of the 8.3 billion plastics created since 1950 have ended up in landfills. Most plastics were not made for recycling at all. However, a new plastics production process has already been proposed and takes into account molecular recycling.[64]

There are many recycling codes on ordinary plastic bottles. Many plastics are difficult to process, and two different types of plastics require different recycling methods. These codes should help. Even plastics that we can recycle are rarely upcycled. Usually, recycled plastic turns into a lower quality product. Recycling degrades the quality of the material through contamination and wear. “Plastic is made up of carbon-containing molecules called monomers that are combined to form polymers. Monomers are often combined by adding chemical additives that can also give the resulting plastic various characteristics such as toughness and flexibility. The problem, however, is that these additives make it hard to recycle plastic in the future because they stick to the monomers. With PDK, the researchers at the Department of Energy’s Lawrence Berkeley National Laboratory developed a recycling technique that fully retrieves the original monomers of a piece of plastic, which can then be repurposed into new types

[63] Erica Sánchez, Gaëlle Langué, Joe McCarthy,*Scientist Just Developed a Plastic That Can Be Infinitely Recycled*[online] ©2019, 08.05.2019 available from: https://www.globalcitizen.org/en/content/recyclable-plastic-closed-loop/ [retrieved 11.04.2021]

[64] Erica Sánchez, Gaëlle Langué, Joe McCarthy,*Scientist Just Developed a Plastic That Can Be Infinitely Recycled*[online] ©2019, 08.05.2019 available from: https://www.globalcitizen.org/en/content/recyclable-plastic-closed-loop/ [retrieved 11.04.2021]

of plastic of the same or higher quality."[65] When the PDK is ready for recycling, scientists place it in a pre-prepared acid container. This acid dissolves the ingredients that bind PDK, and the monomers remain intact. This method can significantly reduce the production of plastics. This should help, especially where there are no recycling options. Governments around the world are beginning to realize the significant damage caused by plastic waste. As a result, they have begun to reduce forms of plastics that are non-recyclable or particularly difficult to recycle. These forms also include polystyrene, commonly called styrofoam, and single-use plastics. The companies concerned are looking for different alternatives to plastics to leave a smaller ecological footprint. Although PDK is not a solution to the global plastics problem, it can motivate recycling and reuse. It can also be one of the steps towards a sustainable future.[66]

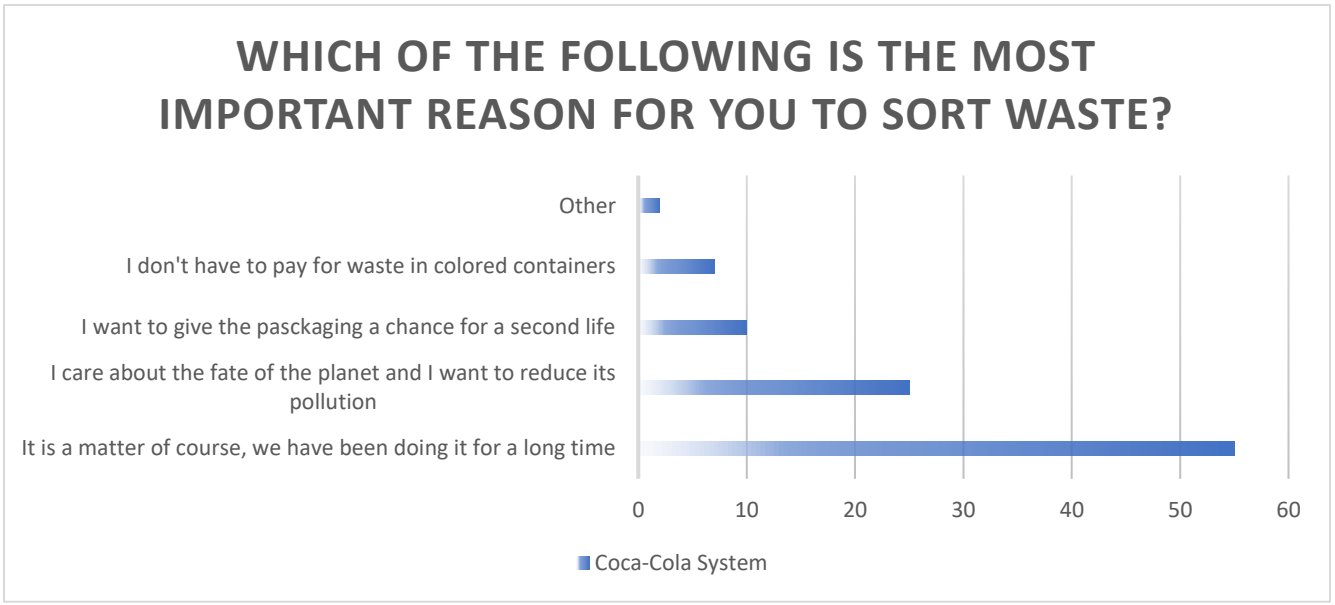
4.2 100% recyclable bottle from Coca-Cola

The Coca-Cola system has valuable liabilities for the Czech market. By 2025, it wants to market fully recyclable bottles, and by 2030, bottles and cans made of at least half made from recycled material. As a first step toward meeting all commitments, Coca-Cola today launched a 100% recyclable PET bottle for its "Natura" brand. According to a survey, recycled material is one of the most important factors when buying packaged beverages. 7 out of 10 respondents would even be willing to pay extra money for this kind of bottle. With the launch of the new bottle, Coca-Cola is becoming a leader. They even managed to introduce a 100% rPET bottle for one of their drinks. Because the bottles are recyclable, they are easy to use for re-production. With a "Natura" bottle, no one

[65] Erica Sánchez, Gaëlle Langué, Joe McCarthy,*Scientist Just Developed a Plastic That Can Be Infinitely Recycled*[online] ©2019, 08.05.2019 available from: https://www.globalcitizen.org/en/content/recyclable-plastic-closed-loop/ [retrieved 11.04.2021]
[66] Erica Sánchez, Gaëlle Langué, Joe McCarthy,*Scientist Just Developed a Plastic That Can Be Infinitely Recycled*[online] ©2019, 08.05.2019 available from: https://www.globalcitizen.org/en/content/recyclable-plastic-closed-loop/ [retrieved 11.04.2021]

has to worry about increasing plastics consumption because this bottle is made of existing PET. Like this is no extra waste created, and the sooner humanity realizes this and will return the bottles to the cycle, the sooner we can get rid of PET bottles thrown in nature. A survey in collaboration with IPSOS showed that PET bottle consumption increased during the pandemic. To avoid consumption, it is possible to buy Natura water in stores in 100% recyclable packaging in two variants, namely, 0.5 litres or 1.5 litres, from March.[67]

The Czech Republic is among the TOP 5 most prosperous countries in Europe in sorting plastic waste. For more than half of Czechs, waste sorting is a matter of course; for a quarter of respondents, the main reason for waste sorting is primarily the effort to reduce planetary pollution.

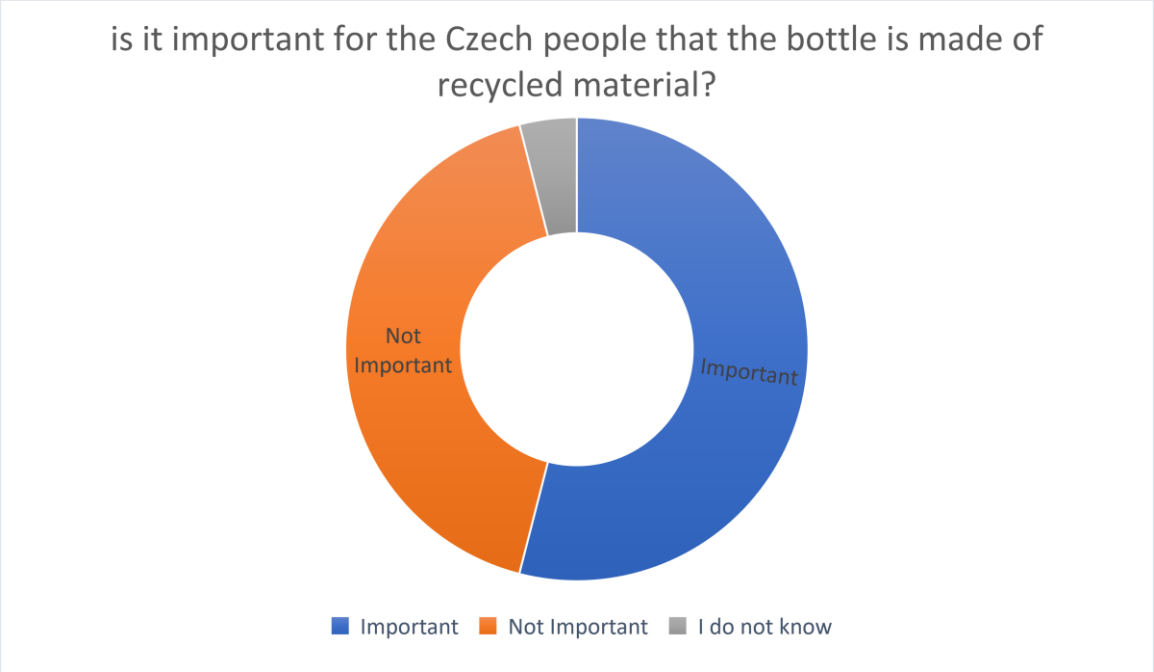


Graph 1 Survey made by Coca-Cola [68]

Both surveys are recent. Coca-Cola interviewed people in March 2021.

[67] Asociace společenské odpovědnosti, *COCA-COLA uvádí na český trh 100% recyklovanou PET lahev* [online] ©2021, 25.03.2021 available from: https://www.spolecenskaodpovednost.cz/coca-cola-uvadi-na-cesky-trh-100-recyklovanou-pet-lahev/ [retrieved 11.04.2021]

[68] Asociace společenské odpovědnosti, *COCA-COLA uvádí na český trh 100% recyklovanou PET lahev* [online] ©2021, 25.03.2021 available from: https://www.spolecenskaodpovednost.cz/coca-cola-uvadi-na-cesky-trh-100-recyklovanou-pet-lahev/ [retrieved 11.04.2021]



Graph 2 Survey made by Cola-Cola [69]

[69] Asociace společenské odpovědnosti, *COCA-COLA uvádí na český trh 100% recyklovanou PET lahev* [online] ©2021, 25.03.2021 available from: https://www.spolecenskaodpovednost.cz/coca-cola-uvadi-na-cesky-trh-100-recyklovanou-pet-lahev/ [retrieved 11.04.2021]

5 Conclusion

This bachelor's thesis focuses on the approach of the Czech population to responsible production and consumption, which is also the subject of one of the sustainable development goals of the United Nations.

Plastics were initially created as a stable material that has benefited various industries. Nevertheless, people have abused this property of plastics and today use them where they do not belong. However, today, they are an inseparable part of everyday life, and it is hardly possible to live without them. They are substitutable only in some cases. The research results in this area have shown that not the production but the consumption of plastics and plastic waste storage are a problem on a global level. The main reason for this problem is that most plastics are non-recyclable. These non-recyclable wastes then remain in landfills and, during their long decomposition, release microplastic particles into the air, which are harmful to the human body.

This situation is not 100 % solvable, but scientists have managed to find a solution to prevent the excessive use of non-recyclable plastics. One such solution is the development of catalysts that are needed for the production of biodegradable polymers. These polymers are subsequently used to produce biodegradable plastics, which in nature are converted into carbon dioxide or water. However, the production of these bioplastics has not yet progressed in such a way that it can completely replace regular plastics. One of the most significant disadvantages of bioplastic production is that we need much energy to produce it. The output from this production is unfavourable in the form of CO_2 emissions or wastewater.

The European Union is also actively involved in waste management solutions. Its latest step was the introduction of a tax on non-recyclable plastics. Therefore, each Member State must, with effect from 1.1.2021, pay 0.80 cents for each

kilogram of non-recyclable plastic in its territory. The main goal of introducing this tax is to motivate companies to change production processes.

The analysis of the Czech market has revealed that sustainable production is not unknown to the Czech companies. Only companies from the food industry were selected for the analysis, as this industry affects every individual. This is important for every individual, mainly because ordinary plastic packaging leaves microplastic particles in food and beverages. These particles then remain in the human body after consuming the food and are trapped in organs such as the liver or kidneys.

With the examples of companies presented, it can be concluded that the Czech Republic is advancing the Sustainable development goals. A concrete example is a company Scuk.cz, which supports local farmers and smaller businesses with the same vision, namely to prevent excessive use of plastic products. One such company is "Elements", which sells its products in jars made of corn starch. Most of the products ordered at Scuk.cz are packed in biodegradable or paper packaging. Nevertheless, natural cosmetics with returnable canisters and buckets also appear on the e-shop of this company.

From the evidence gathered, it can be concluded that people and government treat waste more responsibly than before. This work can serve as an awareness of his actions and a responsibility to the environment.

6 List of Graphs

7 List of pictures

8 Bibliography

8.1 Print Sources

- United Nations. *The Essential UN.* New York: United Nations Publications, 2018. 160 p. ISBN: 978-9211013726
- United Nations, *Yearbook of the United Nations 1946-47.*New York: United Nations. 1947. 984p. ISBN: 9789210602228

- United Nations. *History of the UN*. [online] Available from: https://www.un.org/un70/en/content/history/index.html [retrieved 01.01.2021]

- Kohoutová, Miroslava, *Jak využít odpad,* Hospodářské noviny- komerční příloha:Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

- Záchová, Aneta, *Kdo nerecykluje, bude platit,* Hospodářské noviny- komerční příloha:Život s moderními plasty, 30.09.2020, Praha, [retrieved 30.3.2021]

- Wehle, Tomáš, *O odpadu, biopolymerech a mikroplastech ve vodě. Plasty nejsou žádným strašákem,* Hospodářské noviny- komerční příloha:Život s moderními plasty, 30.09.2020, Praha [retriever 30.03.2021]

8.2 Internet sources

- United Nations: 1941: The Declaration of St. James‘ Palace [online] available from: https://www.un.org/en/sections/history-united-nations-charter/1941-declaration-st-james-palace/index.html [retrieved 01.01.2021]

- United Nations: *1944-45 Dumbarton Oaks and Yalta.* [online] available from: https://www.un.org/en/sections/history-united-nations-charter/1944-1945-dumbarton-oaks-and-yalta/index.html [retrieved 01.01.2021]

- United Nations Development Programme. *Backgrond on the goals.* [online] available from: https://www.undp.org/content/undp/en/home/sustainable-development-goals/background/ [retriever 02.01.2021]

- United Nations. *SDG Indicators – Metadata repository.* [online] available from: https://unstats.un.org/sdgs/metadata/ [retrieved 24.03.2021]

- United Nations Statistic Division *Shrinking our materiál footprint is a global imperative* [online] available from: https://unstats.un.org/sdgs/report/2019/goal-12/ [retrieved 24.03.2021]

- United Nation *E-Infographics_12* [online] available from: https://www.un.org/sustainabledevelopment/wp-content/uploads/2020/07/E_infographics_12.pdf [retrieved 25.03.2021]

- Mashtaq Ahmed Memon, COVID-19 SUSTAINABLE LIFESTYLES FOR PLASTICS AND PACKAGING WASTE MANAGEMENT DURING A PANDEMIC Presentation [online] available from: https://ec.europa.eu/environment/international_issues/pdf/01-06%20-%20Mushtaq%20Ahmed.pdf [retrieved 25.03.2021]

- Brent A. Bauer, M.D., *What is BPA, and what are the conceerns about BPA?* [online] available from: https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331 [retrieved 02.03.2021]

- Ministry of the Environment of the Czech Republic, *Framework of Programmes on Sustainable Consumption and Production in the Czech Republic* [online] available from: https://www.mzp.cz/C125750E003B698B/en/frame_work_scp/$FILE/OPZP-SCP_Framework-20081216.pdf [retrieved 06.04.2021]

- Rick Carr,*Vermicomposting for beginners* [online] available from: https://rodaleinstitute.org/science/articles/vermicomposting-for-beginners/ ©2016 [retriever 27.4.2021]

- Carbiolice, Evanesto® Inside, *What if your yogurt pot turns into compost?* [online] available from: https://www.carbiolice.com/en/evanesto-inside/ [retrieved 07.04.2021]

- Carbios, *Enzymatic recycling: removing the constraints of current processes* [online] available from: https://www.carbios.com/en/enzymatic-recycling/ [retrieved 07.04.2021]

- Asociace společenské odpovědnosti, *O Asociaci,* [online] available from: https://www.spolecenskaodpovednost.cz/o-asociaci/ [retrieved 07.04.2021]

- SRNA, *O nás* [online] available from: https://srna.cz/o-nas/ [retrieved 07.04.2021]

- Scuk.cz, *My jsme Scuk,* [online] available from: https://www.myjsme.scuk.cz/ [retrieved 07.04.2021]

- Scuk.cz, *Nejsem z plastu* [online] available from: https://www.blog.scuk.cz/nejsem-z-plastu [retrieved 07.04.2021]

- Scuk.cz, *Element v Manětínský Scuk* [online] available from: https://www.scuk.cz/manetin/vsechny-produkty?fbclid=IwAR20pbkbRhuLvONjShb6yrhFvNa1_OlpJ_gFCUv8_BnKmtnRpCwOY0JbYBw&ref=PRODUCT_SELLER_PAGE&f=eyJzZWxsZXJIYXNoZXMiOlsickpNcnduTjZYIl19 [retrieved 07.04.2021]

- Element, *O nás* [online] available from: http://element-cz.com/#o-nas [retrieved 07.04.2021]

- Frusack, *O Frusacku* [online] available from: https://frusack.com/o-frusacku/ [retrieved 07.04.2021]

- Scuk.cz, *Tierra Verde: I malou změnou snížíte svou ekologickou stopu* [online] available from: https://www.blog.scuk.cz/post/rozhovor-tierra-verde [retrieved 07.04.2021]

- Carbios, *Carbios opens a new biological pathway with one-step PLA production process* [online] available from: https://www.carbios.com/en/carbios-opens-a-new-biological-pathway-with-its-one-step-pla-production-process/ [retrieved 11.04.2021]

- Asociace společenské odpovědnosti, *COCA-COLA uvádí na český trh 100% recyklovanou PET lahev* [online] available from: https://www.spolecenskaodpovednost.cz/coca-cola-uvadi-na-cesky-trh-100-recyklovanou-pet-lahev/ [retrieved 11.04.2021]

- jsemzerowaste.cz, *Wrapík a Nepytlík číslo 1. na českém trhu* [online] available from: https://www.jsemzerowaste.cz/ [retrieved 12.04.2021]

- beeinfo.cz, *Jak poznat pančovaný včelí vosk?* [online] available from: https://beeinfo.cz/jak-poznat-pancovany-vceli-vosk/ [retrieved 12.04.2021]

- https://slovnik.seznam.cz/

- https://slovniky.lingea.cz/anglicko-cesky

- Erica Sánchez, Gaëlle Langué, Joe McCarthy,*Scientist Just Developed a Plastic That Can Be Infinitely Recycled*[online] available from: https://www.globalcitizen.org/en/content/recyclable-plastic-closed-loop/ [retrieved 11.04.2021]

- Knittlová, Dagmar, *K teorii i praxi překladu,* Olomouc: Univerzita Palackého, 2000, [online] available from: https://ndk.cz/view/uuid:27383d00-7b98-11e4-8ce5-005056827e52?page=uuid:74ffe000-c798-11e4-a640-5ef3fc9ae867 [retrieved 20.04.2021]

- Matějka, Pavel a kol., *Slovník analytické chemie,* Vydavatelství VŠCHT, Praha [online] available from: http://147.33.74.135/knihy/uid_es-004/index.html [retrieved 11.04.2021]

9 Resumé

Jelikož nakládání s odpady patří mezi jednu z nejzávažnějších otázek životního prostředí, v mé bakalářské práci jsem se na tuto problematiku zaměřila. Mým hlavním tématem jsou cíle udržitelného rozvoje, zjištění, jak OSN postupně tyto cíle vytvořila, kdo se těmito cíli zabývá, jak aktivistické skupiny mohou pomoci a jakým způsobem je tato problematika řešena v České republice.

Tato práce je rozdělena do dvou částí, teoretické a praktické. První část hodnotí historický vývoj přístupu k dané problematice. A také podává bližší informace k tématu plastových odpadů. Praktická část je zaměřena na způsoby řešení problémů s plasty. K rozboru byly vybrány reálné firmy na českém trhu, které mají vizi o udržitelné budoucnosti. K analýze byly vybrány převážně firmy z potravinářského průmyslu. Tato část také obsahuje glosář odborných termínů, které jsou v bakalářské práci zmíněny. Glosář je rovněž doplněn komentářem, který se zabývá různými překladatelskými metodami použitými v práci a při tvoření glosáře.

10 Abstract

Since waste management is one of the most critical environmental issues, I focused on this issue in my bachelor's thesis. My main topic is Sustainable Development Goals, how the UN gradually created these goals, which deals with these goals, how activist groups can help and how we solve this issue in the Czech Republic.

This work is divided into two parts, theoretical and practical. The first part assesses the historical development of the approach to the issue. And it also provides more information on the topic of plastic waste. In practical part, it focuses on particular ways of solving problems with plastics. Actual companies on the Czech market that have a vision of a sustainable future were selected for analysis. For this analysis,food companies were mainly chosen. This section also contains a glossary of technical terms that are mentioned in this bachelor's thesis. The glossary is also supplemented with a commentary, which deals with the various translation methods used in the work and glossary creation.