



## **Sustainable food packaging in Linnanmäki 2023**

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## Abstract

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<b>Report/Thesis Title</b> Sustainable food packaging in Linnanmäki 2023
<b>Number of pages and appendix pages</b> 26 + 8
<p>This thesis is a product-based and it is commissioned by Linnanmäki amusement park. The aim of this thesis is to create a sustainability plan for food packaging and disposable tableware. The goal is to have a viable plan ready to be implemented for the season of 2023. The sustainability plan supports commissioner's ongoing development prosperities working together with an environmental management system (EMS) EcoCompass.</p> <p>The outcome of this thesis is a sustainability plan for the commissioner as well as an implementation plan to support the sustainability plan. The sustainability plan discusses the commissioner's current sustainability development state and future sustainability prospects. The sustainability plan is based on the theoretical framework introduced in this thesis.</p> <p>The theoretical framework in this thesis discusses Triple bottom line covers off all three dimensions of sustainability. The theoretical framework also introduces sustainability in food service industry and the concepts of food packaging.</p> <p>The sustainability plan follows the three dimensions of Triple bottom line. All three dimensions introduces the current state of sustainability, the sustainability development objectives and the procedures needed for reaching the goal. The sustainability plan is implemented by the commissioner to support the long-term goals determined together with EcoCompass.</p>
<b>Key words</b> Sustainability plan, Triple bottom line, Circular economy, Environmental management system, Food packaging

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# 1 Introduction

The need for sustainable solutions is increasing in the upcoming years since we are facing the negative effects of urbanization and industrialization, overconsumption of natural resources and the challenges of climate change. According to Huhtamäki (2022) extreme weather and economic conflicts don't only affect businesses, it also conflicts food security. Since these issues have a global effect, the need for sustainable development is required in every industry.

The shift towards more sustainable business structure is already in motion and responsible organizations have advantage in the markets. More and more consumers base their purchasing decisions on sustainable principles, but the pressure for companies to perform more sustainable comes also from investors and industrial value chains. (Business Finland 2020.)

Demand for more sustainable solutions isn't the only thing shaping how many companies operate. New laws, regulations and directives also reform many industries and put more responsibility on companies regarding their mode of operation. European Union's directive on single-use plastic (SUP) main goal is to prevent plastic waste ending up in nature. Single-use plastic products are used once and thrown away shortly after. The directive demands that when more sustainable option is available and affordable, single-use plastic products cannot be placed in the market of EU Member States. This includes among other items food containers, cutlery, plates, straws and beverage containers and cups, also products that are made of expanded polystyrene or oxo-degradable plastic. (European Commission 2019.)

This thesis is product-based, and it is commissioned by Linnanmäki amusement park. The thesis focuses on food packaging and disposable tableware. The aim for this project is to study the current state of the commissioner and the industry trends and demands and to create a responsible sustainable development plan for the use of disposable tableware and food packaging in 2023. As set by the commissioner, the food packaging and reusable tableware needs to be consumer friendly, affordable, safe as well as environmentally friendly in a way that protects the environment not only during the manufacturing phase but also after the packaging has fulfilled its' initial purpose.

Packaging plays a big role in food production and serving, especially in a world that increasingly prioritize hygiene and safety. Food packaging is essential function that provides consumers with hygienic food accessibly, affordably and safely. Despite that the biggest negative impact from the food system is the food that is wasted, not the packaging, disposable food packaging and tableware are often viewed having the biggest negative effect on environmental issues (Reuters s.a.). Huhtamäki (2021) states that a shift to reusable tableware would generate more co2 emissions

and consume more fresh water than the paper based single-use system used in Europe's fast-food restaurants. When sustainably manufactured products are recyclable and recycled, they can be renewed, unlike traditional glass, metal and ceramic multi-use systems meet the end of their road once they can't be used again (European Paper Packaging Alliance s.a.).

The goal of this project is to find the best packaging solutions for the consumed products that are served in Linnanmäki in a way that supports the commissioner in their mission and to find ways to operate more circular. This means that there also needs to be plan for the food packaging after their initial use.

## 2 Sustainability

Sustainability is generally seen as sustaining, maintaining or protecting. The Cambridge dictionary defines sustainability as the ability to continue at a particular level for a period of time (Cambridge University Press 2022). This can be viewed as meeting our own needs while sustaining the ability for the next generations to meet their own needs. Robert Goodland stated that humanity needs to learn how to live with the limitation of biophysical environment (1995, 3). All though sustainability is often viewed from an environmental perspective, sustainability also covers the concerns for social equity and economic development.

The term sustainability is widely described with three interconnected factors, economic, social and environmental. These factors or goals are often referred as pillars (figure 1), dimensions or components (Purvis, Mao & Robinson 2019). Commonly the three dimensions are presented as three intersecting circles, as seen at the top left in figure 1, where sustainability is achieved with combining economic, social and environmental factors.

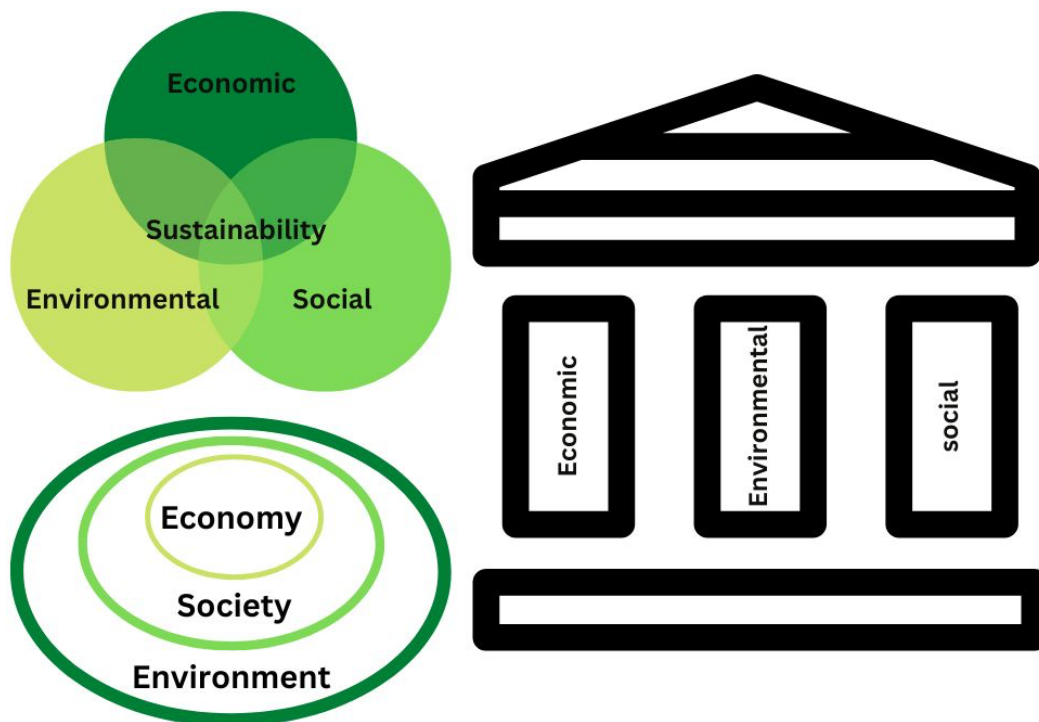


Figure 1. The three dimensions of sustainability. Top left, sustainability's three intersecting circles. Bottom left, Nested diagrams of sustainable dimensions. Right, three pillars of sustainability.

Sustainable dimensions are, in some cases, visually represented as nested diagrams (figure 1), where the hierarchy between these dimensions is indicated. In this schematic the environmental dimension creates foundation for social dimension, which then allows in its limits to grow economic stability.

A Company's success today is not just reflected to its profits, but in order to get an accurate view of the operations, one must look the organization's relationship with environment, community and economy. One theory that helps to find ways to support sustainability in practise is the triple bottom line (TBL) approach. TBL helps recognize the accountability for overall effects of their business by assessing the performance in the environmental, economic and social dimensions of sustainability. In TBL the three bottom lines are referred as people, planet and profit, or in other words the three P's (figure 2). (University of Wisconsin.)

In the context of triple bottom line, organization needs to develop a sustainable financial operating plan. An organization must ensure that the company's income is earned in ethical matters. This means that the company has a financial obligation to pay its suppliers and employees fairly and to choose vendors whose business values it can stand by. (Kenton 2022.)

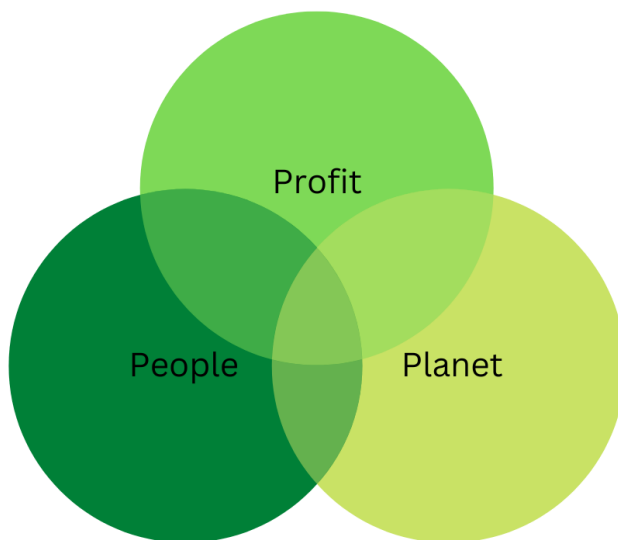


Figure 2. The three P's in Triple bottom line

As sustainability is three folded, all the dimensions need to be taken into consideration. According to Triple bottom line theory companies need to simultaneously work around the three P's in order to achieve sustainability. The connecting point in the intersecting circles in figure 2 represents a sustainable state.

## **2.1 Environmental sustainability**

Goodland (1995, 10.) defined environmental sustainability as maintenance of natural capital. Environmental sustainability is simply trying to increase approaches that can decrease or minimize negative environmental impacts. (University of Wisconsin s.a.)

The environmental dimension of sustainability is typically the one that gets the most attention from companies. Beattie (2021) comments that typically a company implements sustainable practices by reducing consumption of limited resources as well as finding alternative resources with lower environmental consequences.

Goodland (1995, 3) describes environmental sustainability to be about the balance between the human economic subsystem and the biophysical limits of the overall ecosystem. This broadly means that natural capital must be maintained both as a provider of sources and by holding waste emissions within the capacity of the environment. Goodland also emphasizes that humans depend on the surrounding ecosystems and how environmental sustainability has originated from social concerns.

## **2.2 Economic sustainability**

Goodland (1995, 3) refers to economic sustainability as maintaining capital. Willard (2012) on the other hand remind that companies need to ensure that their bottom lines are in a good state in order for them to continue operating.

Duran, Gogan, Artene & Duran (2015, 809) describes economic sustainability to be about maximizing income flow while acting resource efficiently. With economic growth the concern is creating a heavy burden and by that compromising environmental capital. From a sustainable perspective, negative environmental impacts need to be limited during economic growth.

United Nations (s.a.) state that economic sustainability needs to be operated in a way that ensures long-term economic operations that provide fairly distributed socio-economic benefits to all stakeholders. This includes stable income-earning and employment opportunities as well as providing social services to host communities.

## **2.3 Social sustainability**

Goodland refers to social sustainability as moral capital, which includes variety of factors, such as diversity, tolerance and compassion, just to mention few. This dimension requires, according to Goodland, maintenance with shared values and equal rights, through communal, religious and cultural interactions. (Goodland 1995, 3.)



The social dimension of sustainability in Triple bottom line is referred as people. This category includes all stakeholders, including all individuals in the supply chain, customers as well as communities and future generations (University of Wisconsin s.a.). This dimension is strongly connected to corporate social responsibility (CSR). Beattie (2021) states that the social responsibility pillar of CSR holds practises that equally benefit company's, employees, consumers and the community.

Corporate social responsibility is a management concept where organisations integrate social and environmental concerns in their operations. CSR can be viewed as a way through which a company can achieve balance between economic, environmental and social imperatives, while simultaneously addressing stakeholders' expectations. CSR concept, when properly implemented, can create variety of advantages, such as operational cost savings, improved quality and productivity and improved brand image. Key CSR issues include environmental management and eco-efficiency, social equity and responsible sourcing while engaging stakeholders. (United Nations Industrial Development Organization s.a.)

## **2.4 Sustainability in food serving industry**

As the aim of this thesis is to find more sustainable ways to utilize disposable food packaging this chapter introduces sustainability in restaurant industry.

The human population is depending on safe and nutritious food and the demands for food industry to produce, process and deliver food is increasing as the world's population continues to increase. The food supply is a major factor in climate change and water use and pollution and is in today's state contributing to a wide range of environmental damage, thus compromising the health and livelihood of the world's population. (Baldwin 2015, 1.3.)

There is increased awareness on ecological and ethical factors when it comes to selecting food products and the demand for more sustainable development is seen among consumers when dining out (Teng & Wu 2019, 1). At the same time consumers demand high quality food that is safe and that has been produced with minimal negative impacts on the environment. Thus, today it is essential to evaluate the utilization of resources when producing and distributing consumed goods (Vorne, Patrikainen, Kovero, Virtanen, Verta, Lice, Pai, Laumets, Lang & Aan 2012, 2). Baldwin (2015, 1.3) explains that sustainability in food industry is about producing and consuming food in a way that ensures the wellbeing of generations.

Food waste is a major contributor to climate change, nature and biodiversity loss as well as pollution and waste by creating greenhouse emissions and burdening waste management systems. Food waste is defined to consist of both edible parts, the parts of food that were meant for human

consumption, and inedible parts, such as bones and stones, that are associated with food, even though aren't meant for human consumption. According to the United Nations Environmental Programme Food Waste Index Report 2021 from the 931 million tons of food waste that was created in 2019 26% came from food service. (UNEP Food Waste Index Report 2021.)

## 2.5 Food packaging

Food packaging done right is well designed process, where right container, that fits its purpose and is made from right materials is paired with the right products. There is bunch of different reasons to package food in a certain way, including accessibility, affordability and most importantly food safety. Today, when movement to more circular and sustainable practises is needed, the requirements and standards for food packaging are also changing. With a right package the focus is on protecting the product, the people and the planet. This thesis focuses on disposable food packaging and tableware that is related to serving food in a restaurant environment.

When it comes to food packaging safety is the most important thing. International conflicts, climate change and extreme weather phenomenon, economic slowdowns and downturns, and poverty and inequality are external forces acting on food systems and jeopardizing food safety. (FAO 2021.)

Food contact materials, like food packaging and tableware are materials that are intended to be in direct or indirect contact with consumed goods. Finnish food authority (2019) qualify that food contact materials must not transfer any substances to food in a way that they would compromise human health, have an unacceptable change in the composition, like smell, taste or appearance of the food or cause deterioration in its organoleptic properties. Each operator in the supply chain is responsible in ensuring safety, which requires that all food contact material manufacturers, importers, suppliers and wholesalers operating in Finland are responsible of the materials, which physically encounter foods and beverages. (Finnish food authority 2019.)

The use of plastic products that are used once, then thrown away are called single-use plastics (SUP). The European Union SUP directive was introduced in 2019 in order to reduce the negative impact of plastic products on the environment as well as to promote circular economy. The directive requires certain products that are wholly or partly made from plastic, and which are frequently inappropriately disposed, to be furnished with markings that inform the consumers the presence of plastic in the product (European Commission 2020). The goal is to prevent plastic ending up in nature, especially protecting marine environments. The directive restricts the use of some plastic products, that can be produced in a more sustainable way or completely without the use of plastic. The EU directive was impelled in Finland from 23<sup>rd</sup> of August 2021 (Finnish Safety and Chemical Agency s.a.a.).

### 3 Sustainable development

Sustainable development is approach that considers ecological, social and economic dimensions. This means that in order to meet the definition of sustainable development all dimensions need to be taken into consideration (Greenly 2022). Duran & al (2015, 807-808) opens the term sustainable development by having two, equally important elements. The first half, sustainable, stands for durability, and the second half represents expanding the potentials in order to end up in a greater or better state.

Sustainable tourism development is a set of guidelines that help all forms of tourism in all types of destinations to manage sustainable practises. Sustainable principle's main goal is to guarantee long-term sustainability by creating suitable balance between economic, environmental and socio-cultural aspects of tourism development. Therefore, sustainable tourism needs to conserve natural heritage and biodiversity by offering optimal use of the environmental resources, provide long-term economic operations where socio-economic benefits are fairly distributed among the stakeholders as well as protect and respect socio-cultural authenticity, cultural heritage and traditional values. (UNWTO s.a.a.)

#### 3.1 Agenda2030

Agenda2030 is a United Nation's global action program for sustainable development. Agenda2030 guides sustainable development with all the countries in the world and it includes 17 goals that countries together should achieve by 2030 (Kestävähelyys.fi s.a.). The 17 goals of Agenda2030 are listed below in table 1.

Table 1. The sustainable development goals.

1. No poverty
2. Zero hunger
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, innovation and infrastructure
10. Reduced inequality
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships for the goals

Tourism sector can have a positive effect towards achieving all the Agenda2030 goals, but it is seen that it can particularly contribute to following goals listed in table 1, goal 8 Decent work and economic growth, goal 12 Responsible consumption and production and goal 14 Life below water. (UNWTO s.a.b.)

### **3.2 Circular economy**

Circular economy is a framework that tackles global challenges, such as climate change, biodiversity loss and waste and pollution. Circular economy is solution-orientated system that is driven by design and is based on three principles: waste and pollution elimination, circulating products and materials and regenerating nature. The focus here is to rethink and redesign our future. (Ellen MacArthur Foundation s.a.a.)

Circular economy replaces outdated, all though still current, approaches such as linear economic model where once a product or material has served its initial purpose the result is emission, waste and energy loss. This can be referred as the “take, make, dispose” model. Linear economy has major flaws, the first being waste. Another issue is that with this approach we are using our finite resources without protecting them which leads to valuable materials being wasted. The linear economy also promotes a consumption culture where the value of materials at the end of their life is not recognised. (Taylor 2020).

Circular economy also differs from recycling focused practises by preventing waste from being created in the first place. While recycling is a necessary component it still has its limits. Therefore, products and materials need to be designed in a way that ensures them being reused, repaired and remanufactured. (Ellen MacArthur Foundation s.a.b.)

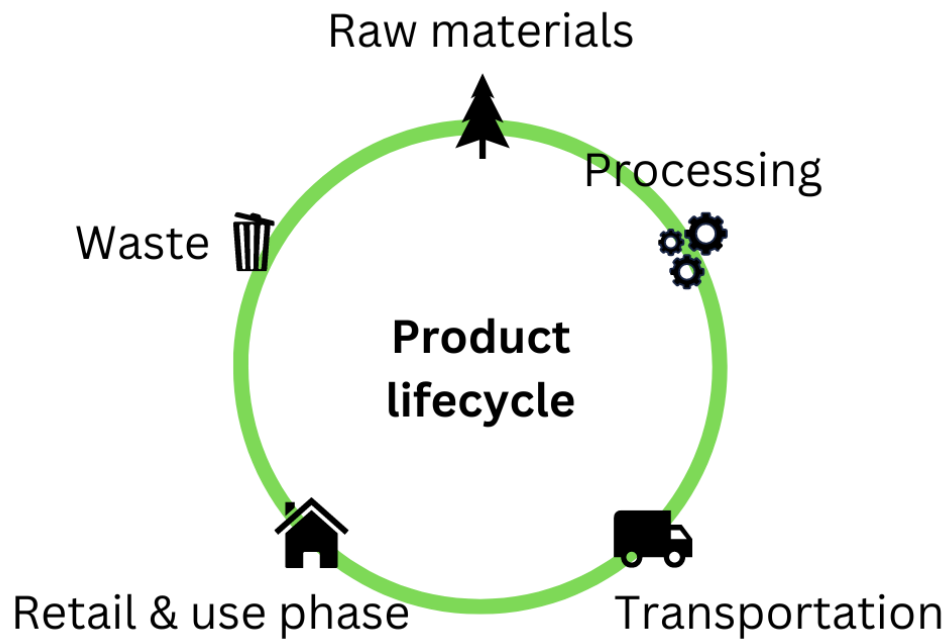


Figure 3. Close cycle system of a disposable tableware

In circular economy materials are continuously flown through the closed cycle system through variety of different processes. Circular economy has two main cycles: the technical cycle and the biological cycle. The technical cycle is relevant for products that are used rather than consumed, such as engines or mobile phones. In technical cycle products and materials are kept in circulation with reuse, repair, remanufacture and recycle. The biological cycle focuses on materials which are biodegradable and can be safely returned to the nature i.e., food. A visual representation of a closed cycle system of a disposable tableware can be seen in figure 3. Some materials can live through both cycles, such as wood, that can move from technical cycle to the biological cycle once they have degraded so that they can no longer be used to make new products. (Ellen MacArthur Foundation s.a.c., s.a.d.)

### 3.3 Sustainable travel Finland

Travel companies and destinations need to operate sustainable for the industry to secure their operation in the future. Sustainable travel Finland offers tools for companies and destinations in tourism sector to help them succeed in sustainable development as well as ensure their ability to answer community demands. (Business Finland s.a.a.)

Sustainable travel Finland is a program that is designed for travel organizations and destinations to support their sustainable measures and choices into the everyday life (Business Finland s.a.a.).

The program is developed by Visit Finland, which is acting as a national expert in the tourism industry and an active player in promoting Finland as a travel destination (Business Finland s.a.b.). The organizations which have gone through the program and filled the needed criteria get Sustainable travel Finland label (Business Finland s.a.a.).

The program includes seven step paths. Every step has its criteria which are monitored to ensure they are being fulfilled. The steps are Commitment, Increasing your skills, Development Plan, Sustainability Communications, Certification & Auditing, Verification & Measurability and finally Agreement & Continuous Development. (Business Finland s.a.a.)

### **3.4 Ekokompassi**

Ekokompassi, EcoCompass in English, is an environmental management system (EMS) and a certificate, which is based on the international ISO 14001 standard (Ekokompassi s.a.a.). EcoCompass helps companies to identify their most relevant environmental impacts and to prevent environmental risks and to become more efficient with communicating about environmental performances and this way become more sustainable and improve competitive advantage.

EcoCompass offers a set of management tools for identifying environmental impacts, to learn about relevant regulations and laws and on creating environmental program with objectives and concrete measures. The EcoCompass also with communication on a company's environmental performance. (Ekokompassi s.a.b.)

The environmental management system is not linked to any specific industry and after contacting EcoCompass the experts offer a management model that fits the organizations needs. After that the environmental expert work together with the company and help with the process to support the construction of the environmental system and the realization of the company's goals and measures. An organization is certified once it passes a third-party audit. The certification is valid for three years and then a new auditing is done. (EkoKompassi.fi s.a.c.)

## **4 Children's day foundation and Linnanmäki amusement park**

Linnanmäki is Finland's oldest and the most visited amusement park. Linnanmäki amusement park was founded in 1950 by six child welfare organisations, that have been maintaining and developing the park in order to raise funds to child welfare, but the story of Linnanmäki started in 1907 when the first Children's day was organised in Finland. The Children's day was an event whose purpose was to raise funds to child welfare by organising dances and raffles and hosting circuses.

In 1957 the six founding organisations, which are Barnavårdsföreningen I Finland, The Federation of Mother and Child Homes and Shelters, The Central Union for Child Welfare, The Mannerheim League for Child Welfare, Parasta Lapsille and Safe the Children, together founded the Children's day foundation. To this day Linnanmäki annually raises funds for the founding organisations. (Linnanmäki s.a.a; Linnanmäki s.a.b.)

The main attraction in Linnanmäki are the amusement rides and the amusement park has over 40 different amusement rides. Children's day foundation believes that fun is for all and for that reason, the park is open for everyone without an entrance fee, excluding some theme weeks outside of high season. Linnanmäki also has free of charge rides and rides that are accessible for disabled visitors. The amusement park has many different game stations, three shops and 20 different restaurants, kiosks and cafes that serve food and beverages for the customers.

### **4.1 Current state of sustainability development**

The current state of sustainability in Linnanmäki is viewed through the Triple bottom line approach to see how sustainability has been implemented. The organization has implemented valid practices to day-to-day operations in order to work in a sustainable way and the sustainability practices are at a good state. Especially, from an economic and social point of view Linnanmäki is operating very sustainably, due to the Children's Day foundation that navigates operations. A visual representation of the commissioner's current state of sustainability can be seen in figure 4.

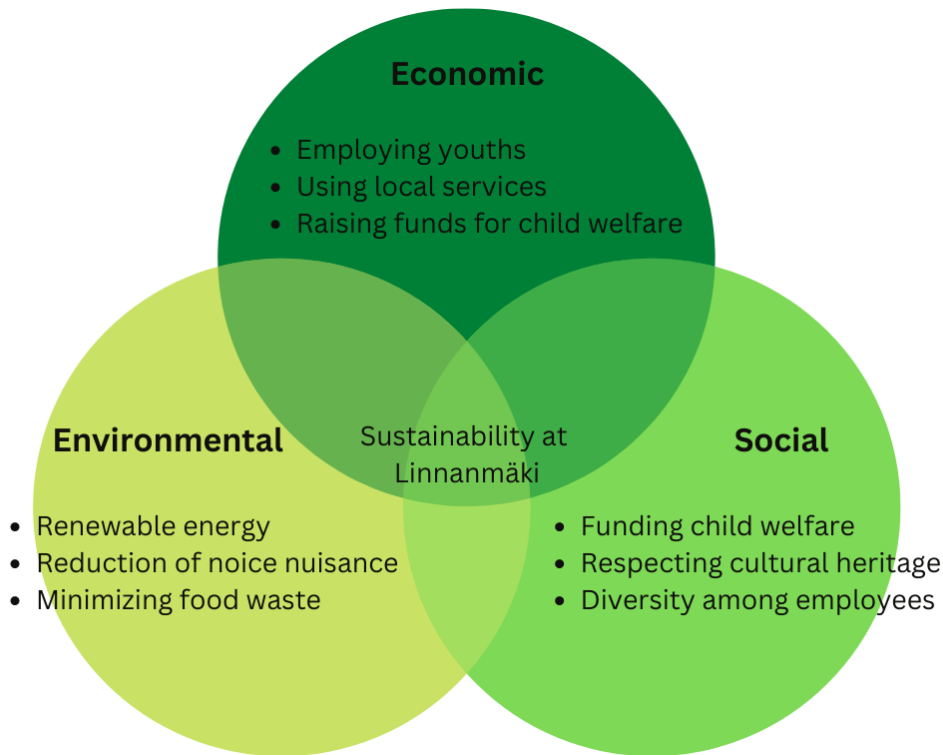


Figure 4. Current state of sustainable development at Linnanmäki

Linnanmäki is a significant employer for youths and because of this they are actively investing in working socially responsibly and constantly developing responsibility. In 2019 and 2020 Linnanmäki was granted the Great Place to Work certificate based on job satisfaction survey results among the seasonal workers. In 2021 Linnanmäki was named the safest organisation that year. The most prominent socio-economic benefits that can be provided via Linnanmäki's operation is funding Child welfare. (Linnanmäki s.a.c.)

Linnanmäki has ensured long-term economic operations and despite the operation being seasonal they have managed to employ dozens of people full year around. Seasonally the amusement park offers employment and income-earning for several hundred people annually. (Linnanmäki s.a.d.)

Environmentally Children's day foundation has drafted an environmental program that helps manage good environmental practices in Linnanmäki. Environmental program reflects on the surface with cleanliness and waste disposal, safety and noise nuisance reduction. The amusement park uses renewable electricity to operate its amusement rides. (Linnanmäki s.a.c.)

## 4.2 Further sustainability development

As stated in chapter 4.1, the current sustainability practises are at a good state. Nevertheless, there is always room for improvement, and even though Linnanmäki has good sustainability



policies, the need for clear, cross cutting plan is found. There is also a need for improving communication about sustainability. In October 2021 Linnanmäki joined environmental management system, EcoCompass, to increase sustainable practices.

Since starting the environmental management program four themes around Linnanmäki's operations were selected, together with EcoCompass experts, which to improve. The four themes are waste management, communication, procurement and energy. All themes then have specific goals to target.

After the organization had completed a sustainability plan with the support of EcoCompass and its experts, an auditing was done to achieve the certification. Auditing is a systematic examination whether the organization's activities and related results match the expectations and the plan. In October 2022 and external auditing by impartial expert on the subject was done at the amusement park and Linnanmäki gained the EcoCompass certification.

As the purpose of an environmental management program is continuous improvement in sustainability Linnanmäki's work on sustainability subjects will be continued. Each year new goals will be selected, measured and their implementation will be monitored. This supports the amusement park's sustainability work in the long-term. As new goals and practices are implemented, a new auditing will happen every third year to see if the sustainability activities and results have met the goal, which then validates the EcoCompass certification.

## 5 Process description

The full process, from start to finish will be described in this chapter. The start being the kick-off for the project and the final product is a plan for sustainable food packaging in 2023.

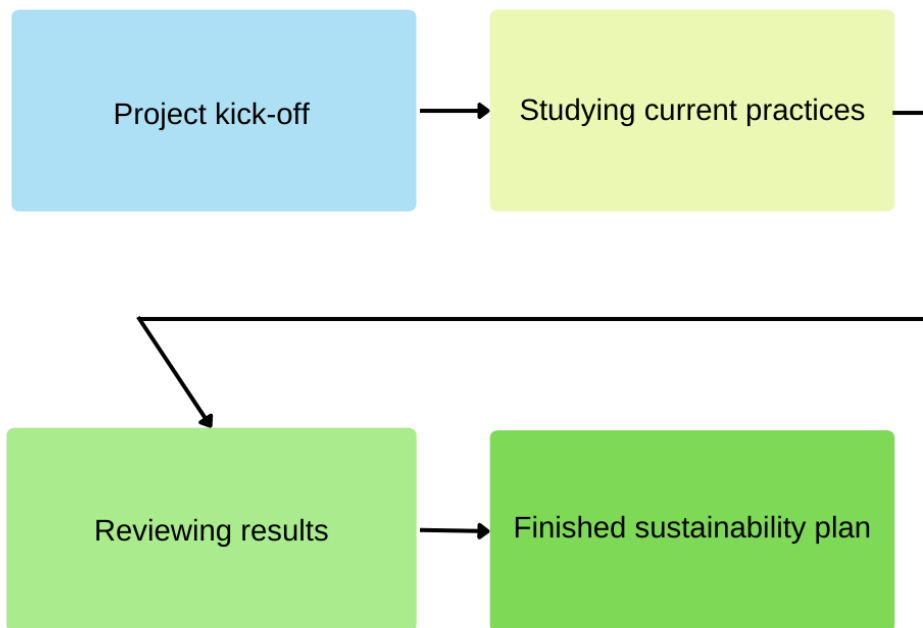


Figure 5. Flow chart of the process

The flow of the process, as illustrated in figure 5, shows that after the process kick-off the second phase was studying the current practises and procedural. This included doing research on industry trends, laws and regulations as well as on industry suppliers and what solutions and products they are offering. The third phase was about making decisions for the new practices and products after the results of current practices were reviewed. Phase four is the finalised plan for sustainable tableware in 2023.

### 5.1 Project kick-off

I started working in Linnanmäki in January 2022. At that time, I was still lacking my thesis for me to finish my studies and get my bachelor. The service director of our department told that if I needed any help graduating or a subject for my thesis, that my employer would be happy to help with that. In February we got together and brainstormed some ideas for the thesis that would both benefit me and the commissioner. The plan for using more sustainable tableware and food packaging was in

needed and was selected as the topic since it already goes hand in hand with my work at Linnanmäki and is a subject that interests me. It was also relevant since Linnanmäki was working on receiving Ecocompass certificate and one of the chosen subjects to work on was waste management.

## **5.2 Project timetable**

The timetable for this project was established from the very beginning and the goal was to have finished plan in August of 2022. It was clear that decisions regarding food packaging and tableware needed to be made in time for the plan to be ready and in action for the 2023 season in Linnanmäki.

According to the original timetable, the goal was to study the current situation in the spring of 2022 and getting to know the current procedural during the summer season 2022. During that time the goal was also to collect a database for the thesis. Originally the deadline for most of the decisions regarding tableware and food packaging were meant to be made in August 2022.

Unfortunately, the schedule needed to be adapted throughout the process, since the ongoing war in Ukraine and the effects it has had on European supply systems had an impact on our team in the restaurant department and increased our workload intensively. Luckily in August the situation for us calmed, although the conflict is still ongoing, and I was able to continue to work on collecting database and to get information on suppliers. After the effects of the conflict was experienced during the summer of 2022, it was clear that we needed to make some precautions to secure our operations for the 2023 season. This, for us meant that we more likely needed to make some purchasing in advance as well as calculate estimated need for certain products so that the suppliers could prepare for our needs. The unpredicted situations ended up costing the project about two months and delayed the finished plan to be ready in October of 2022.

## **5.3 Studying current practices**

Getting familiar with the sustainability practises involved getting information on the materials of the used tableware, on the product suppliers and the origin of the products. This part of the process also included getting information about how certain items were meant to be recycled and how it was communicated in the amusement park.

The use of the food packaging items needed to be investigated, for what food product it is being used, what requirements the item needs to have, such like markings of volume in beverage cup that is used to serve alcohol, the capacity of the items and how they behave when in touch with, for

example grease or hot products. In addition, recycling policies on impure tableware were researched to ensure that communication on recycling is done correctly in the future.



Figure 6. Visual guidance on recycling at Linnanmäki in 2022

The recycling policies and guidance in the Helsinki region were researched as well as how recycling was communicated to the customers visiting Linnanmäki. This included studying the written guidance, visual guidance, as seen in figure 6, and which recycling bins are available for the customers and where they were located.

#### 5.4 Review of the results

After studying the current operating policies on disposable tableware, the results were reviewed. The results showed what was done right and what needed improvement. The results were assessed from perspective of sustainable development.

The current policies were focusing on right materials that fit their purpose when serving food and beverages. This includes considering shelf life, appearance and of course safety and health. This was taken into consideration to ensure that the operation in the restaurant department continues to implement these practises.

What the results showed about future improvement prosperities circled around recycling, communication and procurements. Although communication about tableware materials had been done (figure 6) the recycling policies differ from region to region, and this is one part where the restaurant

department at Linnanmäki needs to be up to date to ensure that the right recycling policies are met at the amusement park. The communication is key component in improving recycling rate.

## **5.5 The result of the project**

The result of the project is a sustainability plan for disposable tableware. The sustainability plan for disposable tableware needs to be three folded, in order to fill the requirements of sustainability. All three dimensions of sustainability, social, environmental and economic factors need to be taken in consideration when planning how to operate. The triple bottom line approach supported the process of the plan, and six different sustainability objectives were selected.

From environmental perspective the sustainability plan includes two steps. The first being selecting products that are environmentally friendly. This means that the products that are selected need to be produced ecologically from responsible materials. The second step is providing the necessary needs for recycling within the amusement park and communicating to our customers as well as employees on recycling after the initial use of the products. The goal for the environmental aspect is to choose products that generate as little pressure on the environment during the manufacturing stage and can be recycled multiple times after use. The chosen products are made from recycled fibers or from wood that has been responsibly cut down and is ecofriendly certified.

As the move towards more circular economy is in motion, we also need to ensure that the materials are being recycled after they have served our customers. A visual representation of an ideal closed cycle system of disposable tableware can be seen in figure 3. In order to succeed in this, one part of the sustainability plan is to provide the customers the necessary recycling bins as well as the needed information about recycling. This includes written and visual guidance (figure 6).

As mentioned previously, Linnanmäki's mission is to raise funds for child welfare. For this reason, also the economic aspect needs to be in line with the mission. This means that the costs for food packaging needs to be affordable so that the restaurant department can be economically profitable and thereby Linnanmäki can secure its mission to raise funds for child welfare.

To achieve this goal the selected supply partner was based on how well they could provide the needed products for the use in Linnanmäki. By doing so, the food packaging can be bought in bulk, which brings the cost of the products down. To support this goal, the plan to purchase some products in advantage and store them in Linnanmäki's own storage, was made. With this the costs from external logistics center and shipping can be minimized.

As social sustainability is, among other things, about health and safety, the goal of this project is to operate as safely as possible without compromising health of the customers. Linnanmäki's

operations as part of the Children's Day foundation is strongly involved in social sustainability, since the mission for the amusement park is to collect funds for child welfare. The goal for this sustainability plan is to support the mission of Linnanmäki.

To increase social sustainability the plan for sustainable food packaging is to prefer products that are designed and manufactured in Finland. This supports local communities and increases employment within the Finnish borders.

## 6 Discussion

In this chapter the writing process and written outcome will be discussed. I will discuss the key findings between theoretical framework and the sustainability plan. Finally, I will introduce the learning outcomes.

### 6.1 Key findings

The theoretical framework was used to help me understand what the sustainable dimensions are and how they should be implemented in the sustainability plan. The research on sustainability and theoretical framework gave support when falling back to researching on suppliers, available products and used materials of disposable tableware as well as the commissioner's current practices. This also included getting familiar on recycling policies in the area where the commissioner operates as well as the origin countries of the materials being used.

As sustainability is three folded, one key finding was that it was clear that all sustainable dimensions need to be considered within this sustainability plan (Greenly 2022). The triple bottom line approach helped me view both the project as well as the commissioner's current sustainability state as whole and gave me clear structure on how to approach the writing process. The three dimensions of sustainability, environmental, economic and social, were explained in chapters 2.1, 2.2 and 2.3. After sustainability as a subject and sustainable approaches were researched the process of looking into the commissioner's sustainability practises was simple. The commissioner's current sustainability practises were discussed in chapter 4.1.

Another key finding was that the need for sustainability plan for the use of disposable tableware were found as companies are in need to make more sustainable actions. As stated in chapter 3.2, the movement to circular economy is relevant in order to prevent waste and pollution and to protect the finite sources of our planet (Ellen MacArthur Foundation s.a.a.; Taylor 2020). The finished sustainability plan supports the movement towards circular economy.

As Keaton (2022) stated, with the triple bottom approach a company must develop a financial operating plan and to validate vendors with whom they share the same values when it comes to earning income. This was one key finding that affected which supplier were chosen to work with in this project. When it came to selecting a supplier, a closer look was done on the suppliers' sustainability work.

The finished plan can be used as a communication tool on sustainable matters. Even though recycling policies and laws regularly change and new materials and innovations on food packaging are researched and designed non-stop, the finished sustainability plan for the commissioner can be used as a guide if and when changes in the operating policies need to be made. I believe that this plan can support the commissioner's future sustainability development prospects, which are listed in chapter 4.2.

As a final product from this thesis the commissioner got a sustainability plan for disposable tableware, which can be implemented as is during the amusement season of 2023 but, can also be used as a frame for future references as food packaging and related laws and regulations develop.

## **6.2 Learning outcomes**

My professional development made progress during the process. I was able to not only gather a broad understanding about sustainability, but also was able to learn how to plan a project from start to finish. I have previously been a part of different projects and have participated in the planning of the process, but this time I had more responsibility, which was a great learning opportunity for me. I was fortunate to be able to meet with suppliers and communicate to them about commissioner's needs and this way create professional connections.

Personally, I learned that time management plays a big role in projects like this, which take a lot of time to do. I learned that often life gets in the way of these long-term projects and how crucial it is still to stick to the schedule. I was not always able to be on point with the schedule, but I found the time and energy later to catch up with my tasks. I learned that time management isn't my strong suit, but I now know that it is something I can develop in the future. Here, I also learned how much motivation drives me and how important it is to give myself clear deadlines. I found great feeling of success once the plan was finished, which interested me on possibly working on different projects in my professional future.

For the future research, more focus on the recycling policies and where and how waste is recycled could be researched separately. Now these subjects were investigated as supporting the communication about chosen materials of used food packaging. A separate division on regional recycling policies could have been done to gather a wider understanding on the life cycle of disposable tableware after their initial use.



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## Appendices

### Appendix 1. Sustainability plan for disposable tableware in Linnanmäki 2023

2022

#### **Sustainable food packaging in Linnanmäki 2023**

This sustainability plan is made for the restaurant department operating in Linnanmäki amusement park and its goal is to find sustainable practices for the 2023 season, regarding disposable tableware and food packaging. This plan is made for the commissioner's internal use.

The plan is created implementing sustainable development that divides sustainability into three objectives, social, economic and environmental. The plan is based on the purchase, use and recycling of disposable tableware in the amusement park. The sustainability plan supports commissioner's ongoing development prosperities working together with an environmental management system (EMS) EcoCompass.

This plan consists of five different parts. The plan holds the sustainability objectives, the communication about recycling and improving the recycling rate and reducing waste as well as the implementation plan. It also introduces the chosen products and the materials used in them.

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## Sustainability objectives

### Social sustainability

**Current situation:** The food packaging and disposable tableware that have been used in 2022 have been made and exported from outside of Finland.

1. **Goal:** Increase the number of Finnish products to be used in the amusement park  
**Actions:** Work with a supplier operating in Finland  
**Responsible person:** Product management manager / product management specialist

### Economic sustainability

**Current situation:** The food packaging and disposable tableware have been chosen on the basis that they are as affordable for both the restaurant department operating in the amusement park and the customers and thus supports Linnanmäki's mission to raise money for child protection work

2. **Goal:** The goal is to continue financial responsibility by choosing inexpensive, but suitable and functional food packaging products so that commissioner's mission to collect funds for child welfare can be realized  
**Actions:** The aim is to choose inexpensive products and to purchase certain products in large quantities and to store them in the amusement park's own premises thereby minimizing the storage fees and delivery costs of intermediaries such as logistics centres  
**Responsible person:** Product management manager & product management specialist
3. **Goal:** Enable jobs in Finland  
**Action:** Work with a domestic supplier operating in Finland  
**Responsible person:** Product management manager & product management specialist

### Environmental sustainability

**Current situation:** The food packaging and disposable tableware have been selected based on that they can be recycled after their initial use

4. **Goal:** Choose products that are environmentally responsibly produced  
**Action:** Prefer disposable tableware and packaging made from recycled materials or from responsibly cut down forests  
**Responsible person:** Product management manager & product management specialist
5. **Goal:** Improve the recycling rate on the disposable tableware  
**Action:** In addition to the purpose of the product, the packaging is selected based on what is the most environmentally friendly to recycle and has the longest life after its initial purpose  
**Responsible person:** Product management specialist
6. **Goal:** Improve the recycling rate  
**Action:** Improve communication about recycling. In addition, increasing the number of recycling bins in the area of the amusement park allows improvement in the recycling rate.  
**Responsible person:** Product management specialist & environmental and sanitation specialist

2022

## Selected disposable tableware

The disposable dishes were selected for the season 2023 based on the goals mentioned above and based on the purpose of use of the dishes. Sustainable development goals were also guided by the parts of Linnanmäki's EkoKompass environmental program. The selections considered the materials and the versatility of the dishes, as well as the continued recycling of the dishes

Table 1. The chosen tableware products

LIDS FOR CUPS	MATERIAL	RECYCLING METHOD
FIBER LID 80MM	bagasse	<i>compostable</i>
FIBER LID 90ML	bagasse	<i>compostable</i>
<b>STAWS</b>		
PAPER STRAW 6MM	paperboard	<i>cardboard recycling</i>
<b>PLATES</b>		
PLATE 16*16CM	bagasse	<i>compostable</i>
PLATE 22CM	bagasse	<i>compostable</i>
<b>CLEAR DRINK CUPS AND LIDS</b>		
CUP 300 ML	RPET	<i>plastic recycling</i>
CUP 400 ML	RPET	<i>plastic recycling</i>
DOME LID 95 MM	RPET	<i>plastic recycling</i>
PINT 500ML	RPET	<i>plastic recycling</i>
<b>RASIAT</b>		
GRILL BOX 40MM	bagasse	<i>compostable</i>
GRILL BOX 30MM	bagasse	<i>compostable</i>
SALAD BOWL 750ML kartonki	bagasse	<i>compostable</i>
LID FOR SALAD BOWL	RPET	<i>plastic recycling</i>
<b>CUTLERY</b>		
WOODEN FORK 165MM	wood fibre	<i>compostable</i>
WOODEN KNIFE 165MM	wood fibre	<i>compostable</i>
WOODEN SPOON 116MM	wood fibre	<i>compostable</i>
<b>HOT DRINK CUPS</b>		
HOT DRINK CUP 250 ML	paperboard + PE	<i>cardboard recycling</i>
HOT DRINK CUCP 350 ML	paperboard + PE	<i>cardboard recycling</i>
<b>COLD DRINK CUPS</b>		
COLD DRINK CUP 400ML	paperboard + PE	<i>cardboard recycling</i>
<b>ICE CREAM CUP</b>		
ICE CREAM CUP 175ML	paperboard + PE	<i>cardboard recycling</i>



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## Material choices

When choosing the right disposable tableware for the use of the commissioner, materials used in the products were closely looked at. Materials were chosen based on how environmentally friendly they were produced and how easy it would recycle them after their initial use. The right products support sustainability, decrease food waste and serve customers visiting the amusement park.

The material choices for the 2023 leisure season were based on the fact that they cause the least possible burden on the environment during the manufacturing phase and that they can be further recycled after use. The fiber-based raw materials of the packaging produced by our chosen supplier are 98% recycled or obtained from certified sources.

One factor influencing material choices is the recycling of impure materials. A container made of paper board cannot be recycled in cardboard recycling if the container holds food residue. In this case the right bin to place the container would be mixed waste. For this reason, the dishes and containers holding food were chosen to be made from biodegradable materials and thus can be recycled into compost.

In disposable tableware different materials are used to make the product suitable to be in touch with food and beverages without compromising health and safety matters and having negative affect on the food itself. In cardboard beverage cups, for instance, a plastic layer is used to make the product impervious to liquid. The materials used in the disposable tableware opened in the table below.

Table 2. Disposable tableware materials

<b>Material</b>	<b>Abbreviation</b>
Polyethylene	PE
Recycled polyethylene terephthalate	RPET
Bagasse fibre	Bagasse

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## Communication on recycling

Illustrations are used to make communication about the recycling of disposable containers smooth and clear. The illustrations will be used both on the recycling containers and on some of the containers



Picture 1. Illustration used in 2022

Picture 1 shows a previously used cold cup. In the future, the same illustration will be used, but the word compostable will be changed to recyclable, because a cardboard cup will be used. Thus, the illustration clearly tells customers 'I am 100% recyclable!'

The illustration will be added to a few disposable containers, which move the most during the season. These containers are a cold cup 400 ml, hot cups 250 ml and 350 ml and an ice cream goblet 175 ml. The illustration is not added to every dish that comes into use, so that the costs of the dishes do not rise too high, and the commissioner is able to secure their mission. However, illustrations of disposable containers are added to recycling containers, so it is clear for customers which recycling container each disposable container belongs to (picture 2).

2022



Picture 2. Illustrations of the recycling guidance in the 2022 season

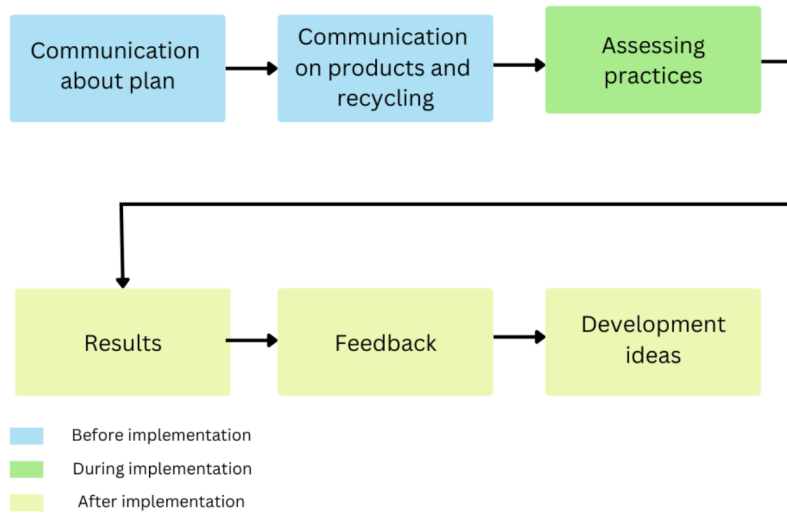
### Reducing waste and improving the recycling rate

In order to reduce waste, material choices are important. For the season of 2023, the number of cardboard containers will be increased. Cardboard fibers can be recycled up to seven times, after which they can be composted or used to generate energy.

A selection of recycling bins will be added to the park area. Cardboard collection containers are placed near the food shops, so that it would be easy for customers to recycle the disposable containers after the use.

2022

### Implementation plan



Task	Responsible person	2023												2024			
		March	April	May	June	July	August	September	October	November	December	January	February	March			
Project communication	Product management specialist																
Implementation	Product management specialist / product management manager																
Feedback collection	Product management specialist																
Assessing results	Product management specialist																
Future development ideas	Product management specialist / product management manager																
Future development plan	Product management specialist / product management manager																

Figure 1. Implementation plan and implementation schedule

2022

The implementation will be carried out in three stages, before implementation, during implementation and after implementation. Before the new practices are implemented, they will be communicated to employees. This includes communication about the sustainability plan itself as well as about the new products and recycling policies.

The implementation will occur from April of 2023 until October of 2023. This part includes assessing the new practices. This part will also be used to gather feedback from the new practices.

After the implementation the results of the new practices will be assessed. This includes assessing feedback from the new practices. After assessing the results new future development ideas will be assessed in order to adapt a new development plan.