

Research Hatchery on Circular Economy

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Research Group: REHA CE

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BENCHMARK ANALYSIS FOR CIRCULAR ECONOMY HUB'S

– for Topinpuisto

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LIST OF ABBREVIATIONS (OR) SYMBOLS

| | |
|------|--------------------|
| ha | hectare |
| e.g. | example given |
| MWh | megawatt hours |
| p.a. | per annum |
| EUR | Currency: Euro (€) |
| REHA | Research Hatchery |

1 INTRODUCTION

This report deals with a Research Hatchery project about circular economy. The Research Hatchery is a concept for combining learning, innovation and research that promotes collective learning and it is based on the social constructive learning approach. This project has been carried out by ten students from the Turku University of Applied Sciences. The team was composed by different kinds of skilled people coming from different countries.

This report is focusing on the practices and working ways of different circular economy hubs around the world. That research will provide innovative ideas that can be implemented in Topinpuisto, the circular economy hub in Turku. The report is divided into different sections. First, the objectives of the project are explained. Moreover, the planning of the project is described, as well as the way and process to carry it out. The report also contains information about the team work, explaining the difficulties and problems during the project, feelings of the group members and successful achievements.

As the project is about circular economy, the report contains necessary definitions and descriptions to understand the topic. But as it has been said, the project goes more in depth with circular economy hubs.

1.1 Circular Economy Hubs

Three different kind of hubs have been searched:

- Industrial hubs: These are centers where different kinds of waste will be handled to recover raw materials and remove pollutants to save the environment.
- Virtual hubs: These centers do not have a physical place or plant. They are virtual platforms where customers can interact easily.
- Community-based hubs: These are hubs that work on topics related to community, environment, habitat, food, textile, etc.

Concrete examples of hubs from those three different categories have been found and detailly described, and the results of these research are explained in this document.

To finish, the obtained conclusions are explained, as well as the proposals for Topinpuisto, where some suggestions about different things they can include to their hub are explained.

1.2 SWOT-Analysis as a Method

As it has been said, the report contains information about practices and working ways of different circular economy hubs around the world. The idea was to identify the benefits of each hub in order to find out innovative ideas that can be implemented in Topinpuisto, the circular economy hub in Turku.

In order to identify the benefits of the hubs, a SWOT-Analysis has been done for each hub. A SWOT-Analysis is a useful technique for understanding the strengths and weaknesses of a hub, and for identifying both the opportunities and the threats they face.

After identifying the strengths, weaknesses, opportunities and threats of the hubs, some development ideas and actions to turn the weaknesses into opportunities have been explained for each case. The conclusions made are explained in this document.

1.3 Objectives

The main objective as a Research Hatchery multidisciplinary team was to find hubs not only around Europe but also around the world. This way, the features that those hubs have, can be implemented in Topinpuisto as long as Topinpuisto did not have that characteristic. The objectives of this team will be separated in two parts:

Objectives of Topinpuisto

- To develop a active circular economy center and network in Turku area.
- New businesses which turn waste to new sustainable products.
- Existing businesses seeking new opportunities in circular economy
- Work for future employees

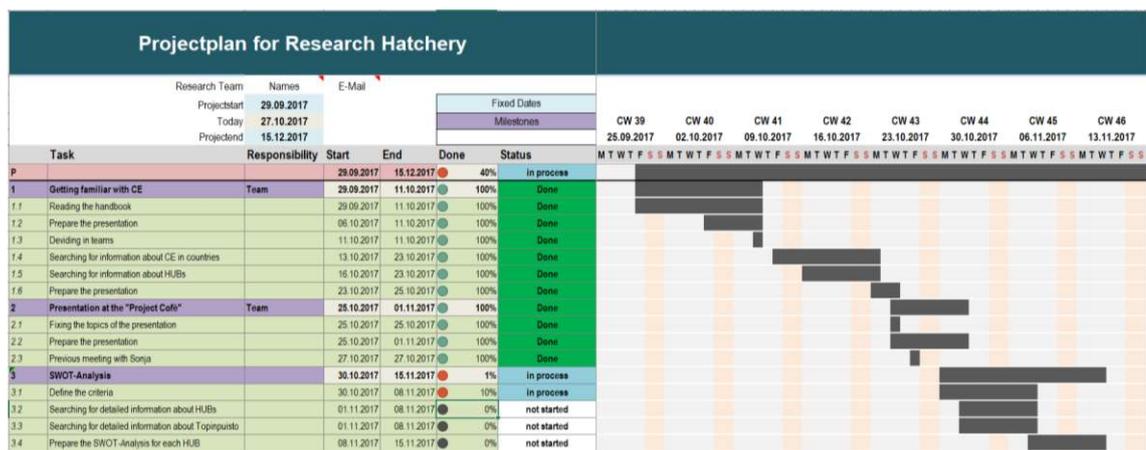
- Best practices which can be implemented also in other finish region and circular economy centers.
- Develop visitor center further so that it could be a recognized place where circular economy made concrete to the public

Objectives for finding hubs

- Find some key features of founded hubs to implement in Topinpuisto, such as new technology to recycle or new processes.
- Find experienced hubs.
- Research what are the partnerships that the founded hubs have. That way, Topinpuisto can take them into account.

1.4 Planning

As we know, for every project, there has to be a planned schedule and a project plan, otherwise the project will end in a mess. After our second meeting, we all decided to make a project plan to have an overview of our project. For the reason that we did not have access to Microsoft Project, Franz took responsibility of our project plan and decided to put his already existing expertise into creating an Excel sheet with our schedule.



2 CIRCULAR ECONOMY

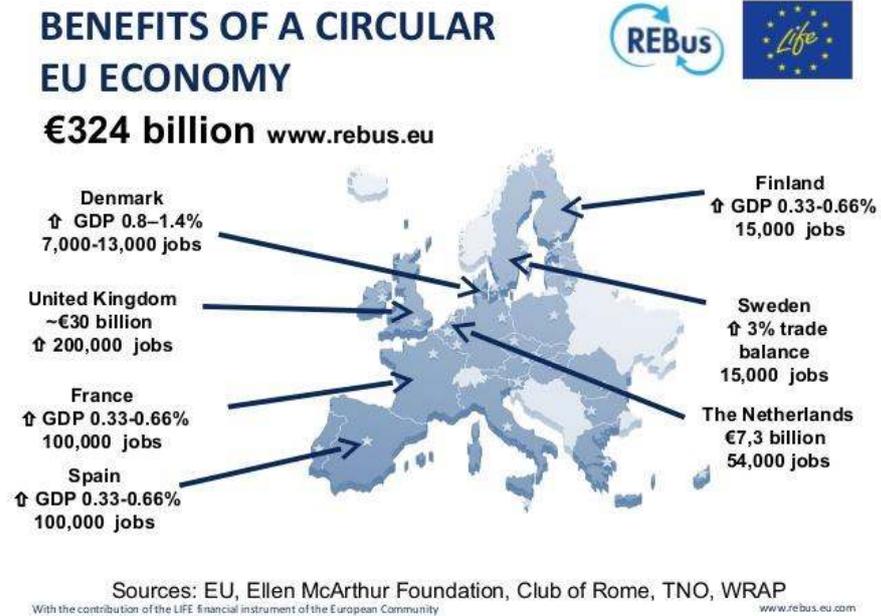
Nowadays, our industrial model is “take, make and dispose” due to that the economy model has to be changed. This new model must be circular economy which take waste-out and make new products and services, reducing the negative impact in the world and it generates wealth of 7.4 billion per year.

Looking beyond the current "take, make and dispose" extractive industrial model, the circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimizing negative impacts. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital.



The benefits of a transition towards a circular economy in Europe could be considerable, reducing environmental pressures in Europe and beyond and minimising the continent’s high and increasing dependence on imports. Increasingly, this dependence could be a source of vulnerability. Growing global competition for natural resources has contributed to marked increases in price levels and volatility. Circular economy strategies could also result in considerable cost savings, increasing the competitiveness of Europe’s industry while delivering net benefits in terms of job opportunities.

As new circular approaches emerge, frictions between the existing linear system and the new approaches are bound to arise. These may be perceived as threats by some stakeholders, but as opportunities by others.



3 CIRCULAR ECONOMY HUBS

3.1 Eko-REC

Eko-REC is a Basque Company specialized in PET recycling. Starting with postconsumer PET bottles they produce goods for the industry that assure an environmental improvement and CO2 emission reduction.

Eko-REC produces goods manufactured with 100% recycled raw material that are 100% recyclables. Those goods are oriented to:

- Automotive industry: First quality Polyester Staple Fiber (PES), under the customer specifications and colours.
- Food sector: First quality PET sheet, transparent, coloured or multicolour under the customer specification. PET sheet produced with A-B-A structure and to food grade.
- Packaging: PET sheet for various applications on the packaging sectors.

(Eko-REC, 2017)

3.1.1 SWOT-Analysis

Strengths

- Environmental improvement and CO2 emission reduction

Starting with postconsumer PET bottles they produce goods for the industry that assure an environmental improvement and CO2 emission reduction.

- 100% exploitation

Eko-REC produces goods manufactured with 100% recycled raw material that are 100% recyclables

- Recycle and transform into their own facilities

The only ones in Europe that they recycle and transform into their own facilities. Some of the infrastructures and objects that are used in the company are recycled by themselves.

- CO2 reduction

They transform waste into 100% recyclable materials and reduce CO2 emissions.

Weaknesses

- Only three sectors

Eko-REC only works in three sectors of the market: food, automotive and textile.

- Low reputation at foreign markets.

This company is not known internationally.

- Need to adapt to the market continuously.

It needs to adapt to the market continuously as it is dedicated to recycling plastic and the world of plastic changes at very high speed.

Opportunities

- Help becoming a cleaner country

All companies that engaged to recycle are helping to become a cleaner country.

- The use of plastic is growing

As it has been mentioned before, the world of plastic is growing very fast. Therefore, the usage of plastic is increasing.

- Public interest in sustainability

It is well seen to be a company which takes care of the environment.

Threats

- Government.
- Future possible competitors.

In the future, some other companies may appear with the same intentions as Eko-REC.

(Eko-Rec, 2017)

3.1.2 Conclusion

A way of getting conclusions from the SWOT analysis is thinking on how to turn weaknesses into opportunities. In this case, regarding to the first weakness (that they work only in three sectors) it would be a good opportunity to expand the company and start working in other areas like toys (a lot of plastic is used in this sector). In this way they could have more customers and they would be more profitable. For that purpose, they would have to invest in machinery (to create the new product) and in marketing to become more known in the new sector.

Concerning the second weakness (low reputation at foreign markets), it would be a good idea to start working with another hub like Topinpuisto in Finland to start getting known in northern countries (Finland, Sweden, Estonia ...). For that, they should contact with Topinpuisto and start talking about what they do. It would be a good opportunity for Topinpuisto as well, due to the fact that Basque people are aware of the environment.

Finally, the last weakness (the need to adapt to the market continuously) could be a great opportunity to be up to date with the latest market developments and thus take advantage of other companies.

In conclusion, Eko-REC is an environmentally friendly hub which need some help to become more known internationally so they could use Topinpuisto for that. An aspect in which Topinpuisto should focus could be that Eko-REC produces goods manufactured with 100% recycled raw material that are 100% recyclables.

3.2 Kalundborg eco-industrial park

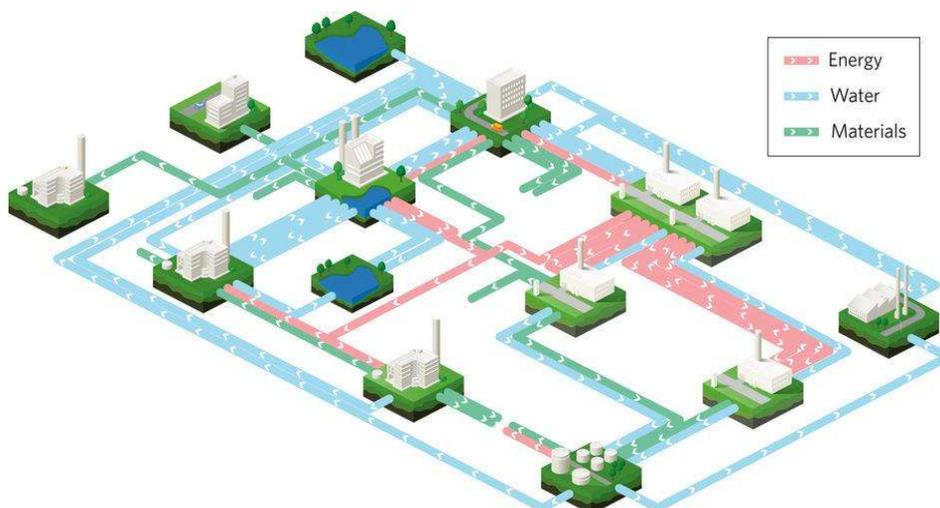
An Industrial Symbiosis is a business relationship focused on sharing resources. This kind of co-operation reduces the total impact of the industry on the environment, and the individual businesses improve their bottom-line figures as well as their competitiveness. (Symbiosis, 2017)

3.2.1 Kalundborg Eco-Industrial Park

Kalundborg Eco-Industrial Park is an industrial symbiosis network located in Kalundborg, Denmark, in which companies in the region collaborate to use each other's by-products and otherwise share resources.

The Kalundborg Symbiosis creates sustainable development in different companies through joint projects. By sustainability, it is understood the long-term responsible use of resources, in balance with economic, environmental and social considerations.

This Industrial Symbiosis involves the exchange of materials, water, energy, by-products and supply chain services among organisations who are in close proximity and who benefit from the collaboration and synergies developed. The exchanges developed often provide significant environmental benefits, for example through increasing energy efficiency with power, cogeneration and by-product reuse, recycling waste waters to reduce overall water consumption and in the joint planning of utility and transport networks that provide more sustainable options, particularly in regional development scenarios. Currently, there are over thirty exchanges occurring in Kalundborg.



3.2.2 SWOT-Analysis

Strengths

- Well prepared industrial structure

It is one of the most important industrial symbiosis currently, so that they have developed the industrial structure very carefully in order to not have any kind of problem.

- Experience with technology development

They have many experts working on this day and night, in order to not to get stuck in the past and keep on moving on and be better day by day.

- Good reputation

As mentioned before, this industrial symbiosis has been the first doing this kind of connection between companies so they really have a good reputation all over the countries that know about it.

- Participants and companies actively invest time and resources

All employees as well as the companies that are involved in this system have an active role and try to make this industrial symbiosis better day by day giving many feedbacks about the way of working.

- Kalundborg Symbiosis has been forerunner of forming partnerships

It has been an inspiration and something to follow for many other companies that wanted to have something similar.

- World's leading industrial symbiosis with a circular approach to production

The waste of one company is the raw material of the next one, that is, no waste is created.

Weaknesses

- Lack of experts

Some more experts are needed in order to develop more the system, although it is working well, for the future they will need more people.

- Low support from the local government

The government is not concerned about how good this kind of systems can be for the environment and the economy of the country.

Opportunities

- Marketing to segment which are becoming more environmentally aware and concerned

This can be a very positive point because this kind of systems can be known worldwide thanks to a good marketing.

- Organizations perceive green marketing to be a competitive advantage, relative to the competitors

As this hub has been one of the first using this circular system, they have the competitive advantage as well as the experience.

- Socially conscious behaviour

People are more and more aware about the environmental issues, so that, it can be a good choice to make people see that this eco-industrial park is a very good solution in order to not pollute the environment as much as we do nowadays.

- Reduce Reuse Recycle reduces costs

This Reduce-Reuse-Recycle system is getting more and more powerful so that, it can be an opportunity that must be taken into account in order to take advantage of it.

- Companies adopt this kind of systems as a marketing tool

Marketing can be a very good tool in order to spread this system all over the world, as mentioned before.

Threats

- Government influence

As mentioned above, the government is not concerned about how good this kind of systems can be for the environment and the economy of the country so they do not give them so much importance as they deserve.

- Green marketing lead to have more competitors

Green marketing is getting more and more powerful, so some companies are taking advantage of it just because it can be better for their profit, not because they care about the environmental issues.

(Greenexchange-Earth, 2017)

3.2.3 Conclusion

As seen above, there are some weaknesses concerning to this symbiosis. For example, the lack of experts for improving the system that they are using nowadays can be a problem in order to develop as a symbiosis. This can be a good choice for considering young people that has been prepared for this, if innovation is needed, fresh air will be the best option. That is, if the company hires some young people with knowledge related to this and motivation as well as innovative ideas, the problem with the lack of experts will be gone.

Talking about the government, there are some issues that must be discussed. Depending on the type of government of each country it can be easier or more difficult to develop this kind of projects, because of the lack of support. It can be a good idea to arrange a meeting with the responsible of environmental issues and make them see how good this symbiosis is for everyone, concern them that the Reduce-Reuse-Recycle

system is way better than the system that it is using nowadays in almost everywhere. The meeting can be the first step of the change.

However, this green marketing can lead to have more competitors, that is, being the first one doing this and having more experience can be one point to get the competitive advantage among all the other competitors.

3.2.4 How can Topinpuisto use this information?

This symbiosis can be a good choice for Topinpuisto to develop a little more in some parts of the system. In this hub, they do not create any waste, that is, the waste of one is the raw material of the next one. In Topinpuisto they can find some connection among all the companies that are taking part here. It could be good for them to contact with the Kalundborg symbiosis in order to get more information about the system that they are using and how they have become one of the most important symbioses. They can also analyse the type of waste that the companies that are working with Topinpuisto and considering the amount of it and who can get advantage of it, they should create a waste chain in order to delete all type of waste that it can be created.

3.3 REMONDIS Lippe Plant

The REMONDIS Lippe Plant is a high-tech HUB for Circular Economy based in Lünen, Germany. It is covering a surface of 230ha and is the largest industrial recycling center in Europe. (REMONDIS-Sustainability, 2017)

3.3.1 REMONDIS world of recycling

REMONDIS is one of the world's largest recycling, service and water companies. With over 32,000 employees and around 800 business locations on 4 continents, the group serves more than 30 million people and many thousands of companies. (REMONDIS, 2017)

This enterprise is using state-of-the-art processes to help conserve natural resources. Collecting, handling and recycling practically every type of waste is their daily business. (REMONDIS-Sustainability, 2017)



Range of recycling services

REMONDIS focus on the big picture when offering recycling services. Support can be provided for example by giving advice in material flow management, logistic concepts and smart recycling solutions.

Due to this way of providing solutions, REMONDIS has developed new technologies and several award-winning processes, e.g. for recovering phosphorus (REMONDIS-Sustainability, 2017) and recycling aerosol cans (Respray, 2017).

Overview on individual services of REMONDIS

- Providing containers and collection systems to suit the type and volume of materials and waste
- Consulting Customers on all matters concerning waste management
- Professional logistics concept to collect and transport large and small quantities of materials and waste
- Pretreatment of materials including sorting, bulking up and removal of hazardous substances
- Classifying and conditioning materials in order to get consistently high-quality output (recycled raw materials and products)
- Cost effectively recycling using environmentally friendly processes (REMONDIS, 2017)

3.3.2 The Lippe Plant in Lünen, Germany

The REMONDIS Lippe Plant is a home to a range of different facilities such as plants for processing and recycling gypsum from flue gas desulphurisation plants, chemicals, wood, plastics, e-waste and non-fossil fuels. (REMONDIS, 2017)



Most of the processes and production are owned by REMONDIS, but there are also a few areas for external companies.

Output from the Lippe Plant

Every year, 0.8 million tons of recycled raw materials and recycled products leave the Lippe Plant. These include goods from the binding agent production, biodiesel, certified compost and plastic pellets for industrial companies.

Besides that, the Lippe Plant is also producing energy and steam. Via the biomass-fired power plant and the fluidized bed power plant, the HUB generates around 310,000 MWh per year. (REMONDIS, 2017)

- Producing energy and steam

By using biomass-fired power plant and fluidized bed power plant, the HUB is producing about 310,000MWh of energy and steam per year. It covers the own annual demand of 189,000 MWh but also benefit external customers. (REMONDIS-Sustainability, 2017)

- Provide information on webpage

The webpage of REMONDIS is built very good. A lot of information about all kind of themes can be found in German but also in English. The structure is very nice and it's simple to navigate. Also a few statistics and overviews can be downloaded to have a closer look in some topics regarding REMONDIS and the Lippe Plant. There also can be seen a movie about the Lippe Plant. (REMONDIS, 2017)

- Open minded about cooperation

REMONDIS is cooperating with a lot of local but also international companies to share know-how and protect the environment. New partnerships are welcome. (REMONDIS-Sustainability, 2017)

- Teaching at the kindergarten and schools

REMONDIS has implemented a nationwide educational project that focuses on recycling and on conserving natural resources. Therefore, they visit kindergarten and schools to teach the children and teenager aged between 5 and 15 years. A range of age and interest-related materials are available to help the children learn about what they themselves can do to ensure raw materials are recovered and returned to production cycles. (REMONDIS-Sustainability, 2017)

Weaknesses

- No weaknesses to point out

Opportunities

- Improving separation of waste by the households and companies

REMONDIS is an enterprise which focus on recycling on the one hand, but also on education and sensitization of customers and society. Due to fairs, workshops and other educational training, the awareness of the separation of the waste could be improved a lot.

- Cooperation and partnerships with external recycling companies

REMONDIS as global player can get in contact with smaller niche companies which are specialized on recycling of particular materials. Together they can benefit from each other by sharing know-how and find new solutions for recycling and saving the environment.

- Pressure on the government to provide an efficient waste policy

REMONDIS as global player, which is based in 30 countries all over the world, knows regulations and rules of treatments of waste from other countries. To improve the German waste policy, the government need external specialist. REMONDIS could be such a specialist for the German government and influence the waste policy.

- Creating new brands for recycled products

REMONDIS already have some own recycled and produced products. The demand for recycled, environmental friendly products will rise in the future. Due to the rising demand, REMONDIS can expand their range of recycled products.

Threats

- Rising competition on the market

REMONDIS and the Lippe Plant are global players. Due to the changing thinking of the world to protect the environment more and more, the competition in this market will get more and more as well. To keep competitive, REMONDIS have to look careful at trends or other companies on the market. Building partnerships would be a good possibility to remain competitive.

- Rising costs for covering the requirements of a more efficient waste policy

If the government reworks the current waste policy, there could be big changes in some segments regarding recycling. REMONDIS should look carefully on the trends the government could set or follow and react in time.

- High costs for developing new products

Developing and producing new recycled products could be connected to high costs. It could be, that there is no demand to the price, the new product would be offered. To prevent losses due to the development and producing of new products, REMONDIS could for example cooperate with other companies to make agreements about joint ventures, for splitting costs and risks, or fixed orders after the development process succeeded.

3.3.4 Conclusion

This SWOT-Analysis shows, that there are a lot more strengths and opportunities than weaknesses and Threats. The REMONDIS Lippe Plant is a great HUB for Circular Economy. They are saving the environment in different ways, e.g. recycling waste to raw materials, producing products, energy and steam, as well as educating citizens.

Even if the current situation of the HUB is good, the company should take advantage out of their opportunities and prevent the Threats at the same time to stay competitive in the market.

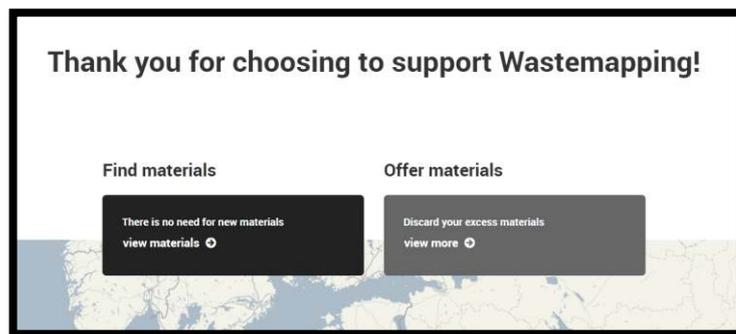
Even if the REMONDIS HUB is not completely comparable to Topinpuisto, there are some issues, Topinpuisto can use.

Some strengths of REMONDIS, e.g. the information, which are provided on the webpage in different languages and the teaching project at the kindergarten and schools, should be considered by Topinpuisto. REMONDIS has a very well-developed internet platform in English as well as German language. Education materials and advise how to implement it can also be found there. To contact the German company for getting more and more detailed information can be a great opportunity for Topinpuisto, as REMONDIS is open minded to cooperate with other companies.

3.4 Wastemapping

WASTEMAPPING is an online tool providing a continuous information flow of available excess and waste materials near you. It is a virtual hub, where different companies from Estonia, Latvia and Finland can find and offer different materials.

It aims to bring waste materials back into circulation/use, with the intent of making new products out of those materials or using them for teaching, designing etc. rather than using new materials. (Reuse, 2017)



3.4.1 Why should companies use WASTEMAPPING?

By giving and taking waste and excess materials back into circulation we save the environment. Furthermore, by giving new life to these leftover materials it helps to reduce the waste handling costs and large amounts of waste ending up in landfills as well saves water, energy and other resources. (Reuse, 2017)

3.4.2 Where comes the idea of WASTEMAPPING come from?

The idea of WASTEMAPPING database originates from on PhD thesis of senior researcher, fashion, theatre and film designer Reet Aus who started working as a fashion designer in 1997 and since 2002 all her collections are made following the principles of upcycling.

The upcycling method, or upward re-processing, is defined as bringing waste back into the consumption chain through design by placing it higher up in the chain than it previously was - this includes environmental as well as commercial and aesthetical value. (Reuse, 2017)

3.4.3 SWOT-Analysis

Strengths

- They discard companies waste and excess materials in an environmental friendly way.

As it is a website where waste materials are taken into circulation, there is less waste material produced and landfilled and this is very helpful for the environment.

- It reduces its waste handling costs.

Companies must pay taxes for the waste handling which depend on the amount of waste that is produced. So if there is less waste, they will have to pay less taxes.

- They give the possibility to earn by selling waste materials.

As the companies have the possibility to sell their materials they can earn money.

- They have the knowing that something new is made out of it.

By offering material, apart from saving money, they know that this is environmentally friendly and they have the chance to advertise that they support the environment.

- The hub has very few costs.

WASTEMAPPING doesn't have many cost as they only work as an intermediary between the companies that want to offer and find materials. So they don't have to pay the transportation, the local,

- It is easy to use and comfortable for the ones that offer the materials.

The webpage is very simple and easy to use. All the materials are classified by the material, country and prize. It is very comfortable for the material suppliers as they can offer the material.

- It gives the possibility to see the available material online.

In the webpage, there is a site where you can find all the available material classified according to the material, country and the price.

- They need less employee.

As the companies that offer and want to find different materials contact in a direct way, the employee is only needed to control that the hub is working properly.

Weaknesses

- Need to travel to the place of the material

As they don't have a fixed location, companies that want to find materials will have to travel to different locations.

- They can't ensure that the material will be in good condition.

As there isn't any employer working as an intermediary between companies the material that is offered could be in worse conditions than what it looks in the picture of the page.

- The hub only works in 3 countries.

WASTEMAPPING works in Estonia, Latvia and Finland.

- Low participation.

At the moment, there are few materials available to find as the companies don't offer material.

- It isn't very known.

People and companies in general don't know this webpage.

- They only work with textile and metallic materials.

Opportunities

- Companies can exchange materials in a very fast way if they take part.

If the companies take part, there could be a high number of exchanges of materials.

- Companies can donate money for the good service.

In the webpage, there is a site where companies that are happy with the result can donate some money for the

- To see the available materials up to date.

Companies can see what material is available at the moment and the information will be updated as it is an online tool.

- Increase in the usage of the virtual hub with new technologies.

As the use of internet is increasing, companies will start using virtual hubs more often.

Threats

- There is a risk of misleading companies that try to find material.

Some companies could mislead other companies in many different ways. For example, offering a material that is in bad condition.

- There can be misunderstandings between the companies.

As companies must contact on their own, there can always be misunderstandings and communicative problems.

- There can be troubles between companies to get to an agreement.

Companies that need and offer the materials, need to get to an agreement to exchange the materials. And there is always the possibility not to get to an agreement.

- Hackers can manipulate the website.

As it is an online tool, there is always the risk of having the webpage hacked.

- People can start using another website.

If other hub starts using the same method, companies could start offering materials in another webpage.

3.4.4 Conclusion

As a conclusion, WASTEMAPPING is a very interesting hub, because it is virtual. It has some weaknesses that can become into opportunities by making some changes to the company.

As they don't have a fixed location, companies that want to find materials will have to travel to different locations. But, hiring a local in every country, which is located in the middle, in case the two companies are far they can meet in a concrete place.

They can't ensure that the material will be in good condition. But if they have an employer who takes care of quality, all the material will be in good condition.

The hub only works in 3 countries, but if they start to work in more countries, they will receive more donations, and the companies will have a wider range of materials to choose.

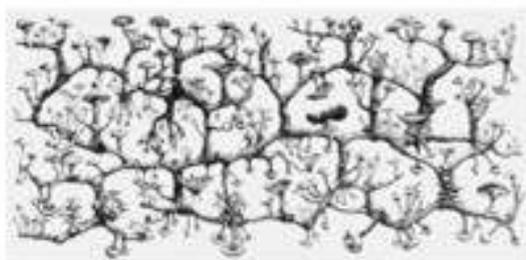
As WASTEMAPPING isn't very known, they have a very low participation, but if they advertise the company more and try to do more marketing, they will exchange more materials and produce less waste, while the companies give more donations.

They only work with textile and metals. If they work with more materials, they will work in more industries, earn more money and produce less waste.

Topinpuisto can take some ideas of WASTEMAPPING. For example, if they add a section to the webpage where different companies can offer and find different materials, more companies will get involved in the project and the participation will rise as it is very comfortable and easy to use.

3.5 Sweden Vera Park

Vera Park is a former municipality owned waste management facility that is transformed into a center for circular economy in Europe. The landfill and waste management infrastructure is now an open arena for innovation and sustainable development. After developing an innovative business model, Vera Park now function as a strategic advisor. (SBHUB, 2017)



Mycelium Rhizome, Richard Gleick, 2008

vera park
the center for circular
economy in Europe

3.5.1 Vision of Vera Park

The vision is that Vera Park should be a leading circular economy center in Europe. This team consists of: Dusan Raicevic, business developer, Conny Wettergren, NSR's Planning and Safety Manager, Martin Dyberg, Communications Officer (convenor), Lars Persson, SBHUB, Per Flink, SBHUB and Heidi Olsson, Communications Officer SBHUB and all of them work together in projects concerning the management and development of waste management systems. All of this business which are part of Vera Park receive advice about circular economy and the The aim is that project partners will work together to develop a new business model as well as a new form of collaboration between industry and academia, where the municipal core mission will be combined with business development and waste minimization.

3.5.2 SWOT-Analysis

Strengths

- They are a lot of business in the team

Vera Park team consists of: Dusan Raicevic, business developer, Conny Wettergren, NSR's Planning and Safety Manager, Martin Dyberg, Communications Officer (convenor), Lars Persson, SBHUB, Per Flink, SBHUB and Heidi Olsson, Communications Officer SBHUB.

- Vera Park in the past was a waste collection center

Until some years ago they work as a waste collection center so. nowadays they know what type of thing can be recycle.

- They have a lot of agreement with other business

In the webpage, we can see all of the different ideas that they have and a short description of them. One example can be the collaboration with NSR to develop the test beds in Vera Park and create the conditions for more innovation and business opportunities.

- Proud about what they do

The name of Vera Park indicates the vision of all workers and citizens of a more sustainable society. It is inspiring in the word "veritas" with came from Latin as well as the word "a new era". Because of that the workers know that they are doing a good job saving the life of the future generations.

- Fossil-free biogas

In the transportation, they use fossil-free biogas

➤ Recycling

Recycling is the process of converting waste materials into new materials and objects. Recycling can prevent the waste of potentially useful materials and reduce the consumption of fresh raw materials, thereby reducing: energy usage, air pollution (from incineration), and water pollution (from landfilling). Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy. The countries in which the citizens recycle is a progress for the country and for the world.

➤ Environmentally friendly

Environmentally friendly or environment-friendly, are sustainability and marketing terms referring to goods and services, laws, guidelines and policies that claim reduced, minimal, or no harm upon ecosystems or the environment. La Organización Internacional para la Estandarización ha desarrollado ISO 14020 e ISO 14024 para establecer los principios y procedimientos para las etiquetas y declaraciones medioambientales que deben seguir los certificadores y etiquetadoras ecológicas.

➤ Park is open for everyone

The Vera Park is open for everyone who is interested on circular economy practices. For that they offer you "Events of different character and focus", "Trendspaning, Workshops, enterprise-oriented networking meetings" , "Larger conferences at a reduced price" , "Advice and matching" and "Contacts with companies and public organizations"

Weaknesses

➤ No English in the webpage

They don't have English webpage explaining what they are doing so those who aren't from Sweden must read the website using the Google translator.

➤ New waste collection center

In the past, it was a waste collection center, now they have had to do another center to collect the residue.

- Few experience

It is new, started in 2016 so they can have lack of experience.

- Lack of money

Nowadays money is almost always necessary to do whatever you want. The lack of money can be a limit when organizing something or when wanting to carry out any activity.

Opportunities

- Zero waste

Swedes recycle nearly 100 per cent of their household waste. They even have to import waste to have something to burn, to turn waste into energy. A true recycling revolution.

- Recycle

Today, recycling stations are as a rule no more than 300 meters from any residential area. Most Swedes separate all recyclable waste in their homes and deposit it in special containers in their block of flats or drop it off at a recycling station.

- Industrialization

There is a lot of demand and with the industrialization the prosperity in society increased and the plastic and packed became more common.

- Change

The world is changing the economy from linear to circular.

Threats

- Problems of money

They need a lot of money to investigate this type of innovation because most of the ideas are news.

- Government

In Sweden, the requirements for environmentally activities are very strict.

- World

This country recycles all of the thing if others do not do anything, it does not be useful.

3.5.3 Turn Weaknesses into Opportunities

They are some Weakness as it can see in the SWOT analysis. This weakness can be turn into opportunities.

- The first Weakness which must be mentioned is that the information in the web page is no available in English. It is in Swedish because the business is from there. It could be understandable, but as it can see in their introduction web page their aim is to be one of the most important economy circular in Europe so it could be a great idea to offer the possibility to choose different languages.
- The second weakness can be the transformation of the waste collection center into a Circular Economy Park. Before this park the Vera Park was a waste collection center so due to this change, the city has to find another place to throw out the rubbish.
- Another point that must be mentioned is that Vera Park was stablished in 2016 due to that it can be say that it is a new hub. The lack of experience can sometimes be a weakness but ass in all new business, the people who work there are so motivated and they really want a change.
- The lack of money is another weakness for this and for all the business because unfortunately the money is one of the most important thing when you want to do something. This lack of money can limit the ideas of the company.

3.5.4 Conclusion

The SWOT analysis shows that Vera Park has more Strengths and Opportunities than Weaknesses and Threats which is a good thing because they don't have enough things to change and in general the hub is going well.

Another thing that it is important to mention is that Vera Park is open for everyone which is interested in circular economy practices so Topinpuisto, the company which is part of the local and national circular economy of Turku, Finland can learn a lot of thing about Vera Park and as it was a waste collection center, they can give advice about what type of product can be recycle in what way.

3.6 Topinpuisto

Topinpuisto is part of the local and national circular economy network, which includes a centre of circular economy being built in Turku's Topinoja, a virtual meeting place and a showcase for circular economy operators. Environmental companies wishing to develop circular economy and resource wisdom together are operating in Topinoja already. The Topinpuisto vision is to be an open pilot and cooperation platform for the extensive development of the value chains of circular economy. Finland's national objective is to become the top country of circular economy. Topinpuisto will be one of the solutions. The development of Topinpuisto is being coordinated by Lounais-Suomen Jätehuolto Oy. (Topinpuisto, 2017)

3.6.1 The Topinpuisto circular economy network

The Topinpuisto circular economy network already involves Lounais-Suomen Jätehuolto, Turku University of Applied Sciences, Ekopartneri Turku, Gasum, Kaivoasema, Kuntec, the Kuusakoski service centre in Turku, Rudus, Smart Chemistry Park and Turku Science Park, Kiertomaa, Valonia and the Regional Council of Southwest Finland. (Topinpuisto, 2017)

3.6.2 SWOT-Analysis

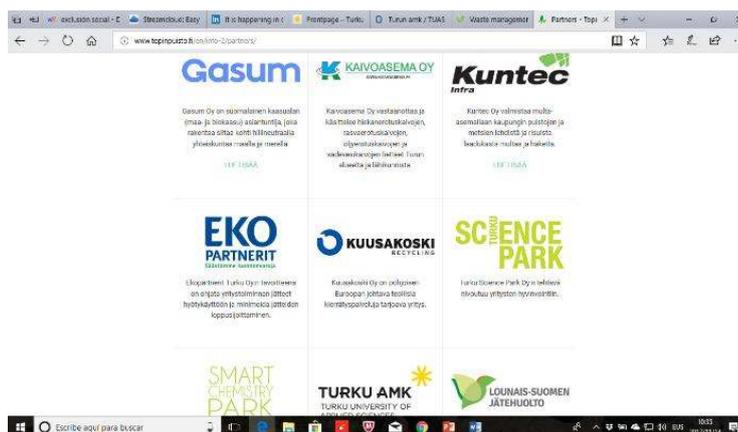
Strengths

➤ Loyal Partners

As in the meeting mentioned, the partners that are working in Topinpuisto have been there for a while, so the availability for those companies is very important (companies that want to create a new project, circular economy)

➤ Closeness

Being so small, it provides closeness. Being in a small city as Turku and having a small company like Topinpuisto, it provides closeness to the customers. In addition, whether the customers have problems they are able to go to the office and speak with Topinpuisto's workers.



- Trainee positions for students

There is also a possibility to train students in Topinpuisto.

- Opportunities to carry out projects or do a thesis.

There is also a possibility to do the thesis or carry out a project with Topinpuisto, like we are doing.

- Training courses on the themes of circular economy, recycling, sustainable consumption and the environment for students from various fields

As an example, can be taken that Topinpuisto give waste lessons to children 2 times in elementary school. Apart from that, the staff is present in various events and happening throughout the year and meet citizens face to face.

- On-demand thematic exhibitions, sorting tasks and craft workshops for various events
- A magazine called Huomiselle

They also have a Facebook page so it is a good platform to share the information.

- Tailored thematic events and occasions related to sustainable consumption and recycling various materials, for instance
- Cooperation projects together with educational establishments

Topinpuisto is cooperating with some universities and polytechnics of Turku such as Turku AMK

- Create synergies

They are working in a cooperative project with 5 other circular economy hubs around Finland (Circhubs, 2017)

Weaknesses

- Really small

Although has a lot of partners is small comparing with other hubs in Europe (REMONDIS). In addition, Turku is a very small city, so it would be very hard to compete with other cities.

- Search for investment

The necessity to look for investors outside Finland, because it is quite small.

Opportunities

- Create synergies with other hubs in Finland, the one in Helsinki because is the biggest one
- Society quite concerns about recycling

Threats

- Different hubs around Europe

Other hubs from Europe that are more powerful and important, could be difficult to compete with them.

- Competition against Helsinki's hub

Helsinki's hub is bigger than Topinpuisto so, it could be a threat whether an important amount of waste goes to Helsinki instead of Turku

3.6.3 Conclusion

Once, the opportunities and weaknesses have been mentioned, weaknesses must be transformed into opportunities in order to build a stronger company. On one hand, as Topinpuisto is surrounded by countries with quite awareness of recycling such as Denmark, Sweden and Germany, the opportunities to carry out synergies with local companies are quite high. Not only doing business with companies but it might be a good opportunity to bring waste from those countries to treat it in Topinpuisto. On the other

hand, seek investors outside Finland could benefit Topinpuisto as well as the surrounding companies. In addition, if a good plan is presented by Finnish firms' another project can be carried out. At the same time, hubs from different European countries can be seen as a threat, it may be a chance to research new methods with that hubs. So, that opportunities could be taken as a two edged-sword.

After saying which weaknesses will be turn into opportunities, how they will be done must be explained. About the synergies, firstly all the companies involved must be called and explain what is our plan, which are our financial support, our assets and so on. In addition, the state itself might be another customer. On one hand, the state is a client that will never bankrupt and is a reliable partner. On the other hand, doing business with such a huge partner it brings some requirements such as being big enough to do business, have enough financial support, good transportation and so on. After that, both companies should make a plan about the goals and strategies that they must carry out, putting together the strengths and opportunities that both companies have.

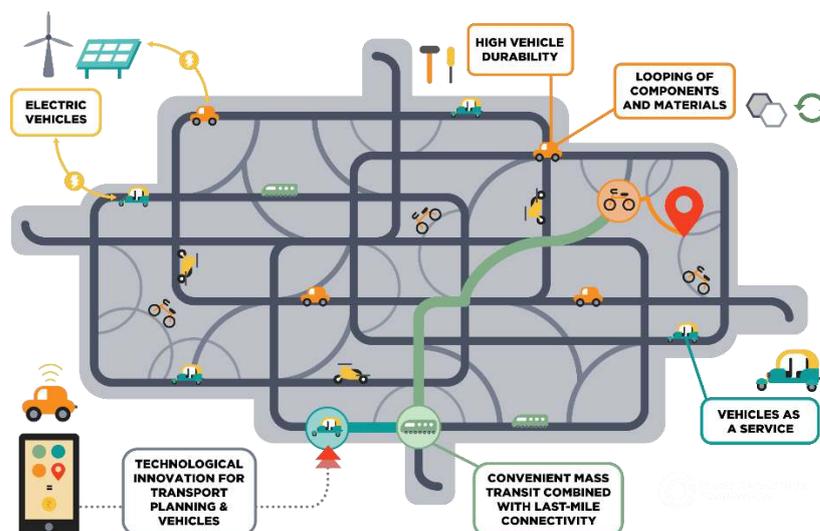
3.7 Ellen MacArthur Indian Hub

The Ellen MacArthur Foundation works with business, government and academia to build a framework for an economy that is restorative and regenerative by design. Today, India stands at the threshold of profound choices, and can look beyond the linear 'take, make and dispose' model. With its young population and emerging manufacturing sector, the country can make systemic choices that would put it on a trajectory towards positive, regenerative, and value creating development. (Ellen-MacArthur-Foundation, 2017)

3.7.1 Indian Hub

Implementing the circular economy, one that is restorative and regenerative by design, could make more effective use of materials and energy in a digitally enabled model of development. Designing a convenient, multimodal transport system enabled by digital technology for less resource-intensive but very effective mobility.

Mobility is vital to economic growth as it gives people access to employment, goods, and services and affects business productivity. As India is building new infrastructure to meet its growing mobility needs, today's choices will determine the mid- to long-term development of the mobility system. A circular economy development path for mobility and vehicle manufacturing could create annual benefits of ₹31 lakh crore (US\$ 482 billion) in 2050, compared with the current development scenario. Applying circular economy principles could also create a highly innovative and effective mobility system, with reduced negative externalities.



3.7.2 SWOT-Analysis

Strengths

- No physical place needed

It is a virtual hub, so costs of basement can be avoided.

- Usage of technology

New technologies could be used in India, so that the society could use it.

- Accessibility

It is really accessible for all kind of users, so that the usage of the hub is bigger.

- Environmental safety

It relies on the environmentally clean ideas.

- Usage of less cars

Get rid of the excess of cars nowadays in India.

- Pollution minimization

As less cars are used, pollution amount will decrease.

- Creation of new jobs

People are going to be needed to work in this hub, work opportunity might be created.

Weaknesses

- Concerning of people

People are not concerned about the need of a circular economy model, so a lot of work must be done in this area.

- Not done yet

The hub is just a project, so it can be a problem.

- Reliability on the internet

In India, it is not that usual to have internet connection, so the reliability on it can be a problem.

Opportunities

- Meeting new people

Opportunity to meet different and new people each time that the app is used.

- Become a cleaner country

Less cars, less pollution, cleaner country.

- Become a richer country

Technologically India would become a richer country.

- Environmental concerning of people

A campaign to concern people might be done so as to ensure people are concerned about the environment.

Threats

- Government

The government can modify the project for their benefit.

- Hacks

As for all virtual apps hacks are a threat.

- Competition

Taxi drivers & Uber

- No investors attraction

Companies not interested in investing on a new project

3.7.3 Conclusion

Focusing on the weaknesses, some opportunities must be taken out of them. The main weakness is the concerning of the people. In India people are not concerned about the environment and circular economy. That being said, it is a great opportunity to be pioneer in the country, and become a model for everyone. How? Marketing, different events and activities for children, youngsters, adults and elderly people. Everybody should be concerned and Ellen MacArthur foundation has previous experience in that.

The second weakness is that this hub is just a project, it is not done yet. This is the best opportunity for the city. New investors should be attracted, and working out the problems beforehand the hub will have better results and more benefits than ever.

The third, and last, weakness is the reliability on the Internet. The problem is that the hub is located in India. There the Internet connection is not available for everyone. So, it could be a problem for the developing of the hub. To avoid these problems, some screen with Internet connection can be posted and installed at some strategical points in this network.

3.7.4 How can Topinpuisto use this information?

So, after the hub has been explained and analysed in detail, some conclusions could be obtained. First of all, the hub is just a project, so it is known in advance that although there are more strengths than weaknesses in theory, later on into practice there are being more.

There is needed a great effort in concerning people, so before starting building up the hub a lot of work should be done with the society.

What should Topinpuisto do like this hub? The answer is quite simple, online platform. One of the biggest issues of Topinpuisto is that it is not known among the citizens. To solve this problem the easiest and most efficient solution is creating some *app* or improving their websites for the citizens. In this XXI century, the usage of new technologies is essential, at least to attract the attention of people.

3.8 CRCLR HOUSE

The CRCLR House is a Berlin based centre for circular economy practices. It was established in 2016, and it was the first circular economy hub in the city.

3.8.1 Description of the Hub

The idea of this centre is to invite like-minded individuals and institutions to meet, exchange ideas and collaborate around circular economy projects. They believe that a different way of living and working together is both necessary and possible.

They also believe that circular economy principles are central to designing such a system. At its essence, a circular economy represents a new way of looking at the relationships between markets, customers and natural resources, and thus eliminating the very concept of 'waste' and recognizing everything has a value.

At the CRCLR House they run a program open to all age groups and people from different professional backgrounds where they can learn about circular practices as applied to various fields.



At the CRCLR House their values are incorporated into everything they do: the construction of the space, to the themes they cover in their program, to the people and projects they collaborate with, etc.

At the CRCLR House is believed that it is time to rethink and redesign how we live and work together in a better way. So that, they currently focus on seven themes in their program as catalysts for this change:

- Art: art opens a door to another way of voicing social issues.
- Habitat: find socially and environmentally fair solutions.
- Community: try to create something healthier, and stop the growing inequality and environmental degradation.
- Finance: investigate the future of social impact finance.
- Textile: experts and consumers join together to rethink the textile industry in order to find a better way to produce and consume textiles.
- Food: enable a more sustainable and equitable food supply
- Open source: it is a decentralised development model, which encourages collaboration. By decentralising the innovation process, people are empowered to develop local real-life solutions, and in this way the systematic transformation can be accelerated.

(CRCLR, 2017)

3.8.2 SWOT-Analysis

Strengths

- Active and creative people involved

All the people working in the CRCLR House believe in what they do, and do their best in order to put circular economy practices running in a practical and innovative way.

- Open hub

The hub is open for everyone interested on circular economy practices and if someone wants to join he or she will be welcome.

- Co-operation, collaboration and shared belief

All the people working in the CRCLR House have the same objectives and values. They all have a shared belief in a circular economy. So, they co-operate and collaborate together in order to reach those objectives.

- Possibility to request for different spaces

There are many versatile spaces in the hub that can be used by anyone that needs them, you just need to apply for one of them. On the one hand, there's the possibility to host various types of events, such as conferences, dinners, markets, performances, etc.

On the other hand, there are 10 art studios that have become home to a diverse community of artists from the contemporary art world in Berlin. Moreover, there's the choice of applying for a meeting room, which offers the ideal climate and intimate space for meetings.

- Knowledge and hard working in different themes

In the CRCLR House there are different circular economy projects running about different themes: art, finance, habitat, food, textile, community, open source.

Weaknesses

- Lack of people

Even if the people involved in the hub are very hard working, the amount of people involved is not very high, so there are people with a lot of responsibilities. It would be better if more people were committed

- Lack of money

The lack of money can be a limit when organizing something or when wanting to carry out any activity.

- Lack of experience

The hub was established in 2016, so it's relatively new. The lack of experience can sometimes be a weakness when deciding how to deal with certain issues.

- Webpage only in English

This is a limitation for someone that don't manage that well with this language, therefore, it's also a limitation for the CRCLR House because they are not able to reach all people. Furthermore, German people can feel disappointed due to the fact that the information is only available in English and not in German, because maybe it does not seem good to them that a hub from their own country does not use their own language to communicate and share information.

Opportunities

- Social impact & social change

The hub can create awareness and make people think about their way of living. With the 'habitat' project they could be able to change the way of living and find socially and environmentally fair solutions related to housing. Art can also be a tool for social change. They rethink the textile industry, so the way to produce and consume textiles can become better.

- Enable a more sustainable and equitable food supply

They have two key projects where they are currently putting this framework into practice: the mushroom lab and community garden.

- Changing the economy from linear to circular

Co-working space in the CRCLR House is a community of activists working on shifting our economy from linear to circular. Any freelancer, entrepreneur, project or start-up has the choice to join a community dedicated to circular economy.

- Opportunity to develop ideas and move forward in strategic areas

The CRCLR House gives the opportunity to book a thematic experience dinner. You can host your thematic conversation around their dinner table. They have developed their own methodology to support your team in overcoming boundaries, in expressing themselves and in listening to each other thereby building a way forward and solutions together.

- Get known and expand their practices

The CRCLR House offers tours for companies, organizations, neighbours, tourists and friends interested in circular economy or curious about what is going on in the CRCLR House. There is also the opportunity to sign up for their newsletter.

- Involve citizens and gain support

If they make themselves known, interested people can join to the project. This will help to address the weakness of the lack of people and they will receive help and support.

Threats

- Motivation could decrease

The CRCLR House is a new hub, and it is the beginning of the project. The motivation of the people involved is now very high, but it can decrease over the time.

- Lack of support

The hub is not very famous yet and there is a lot of people that do not know about it. Therefore, new people are maybe not coming to the CRCLR House, so the hub may not feel supported.

3.8.3 Turn Weaknesses into Opportunities

In this part, some development ideas and actions to turn the weaknesses into opportunities are going to be explained.

As they are shown in the SWOT analysis, the lack of people, lack of money, lack of experience and the fact that the webpage is only in English are the weaknesses of the CRCLR House. Now, our objective will be to turn this weaknesses into opportunities. Therefore, we will propose some actions with which we will be able to achieve our target.

- To turn the lack of people into an opportunity, we have to think that the CRCLR House has to get known as a hub and also keep people informed about the things they do and the practices they carry out there, concerning to circular economy. An action that will help to achieve that, is to organize various activities open to all citizens and to do advertising about these activities, such as, to stick posters in strategic places of the city, to talk about this with other people, to announce the different events in their social webpages (E.g.: Facebook), to start original advertising campaigns... in order to catch and attract people.
- In my opinion, this is the most difficult weakness to turn it into an opportunity, because as I have known, members of the hub already do the best to get them known. They write about the things they do in Facebook, they also have a newspaper to talk about the news in the CRCLR House, etc. This means that they are conscious that the lack of people is a weakness that must be improved,

and even if they are already trying to do it, it is of course a complicated process in which they have to put a lot of effort yet.

- The lack of money is also a weakness for the CRCLR House. Nowadays money is almost always necessary to do whatever you want to do. The lack of money can be a limit when organizing something or when wanting to carry out any activity. To be able to do everything they want, they must put an end to this limitation. We have some ideas for that: organizing solidary markets, selling lottery in which a basket full of products produced following circular economy practices (food grown up in the community garden, recycled products...) will be raffled, organizing some kind of events in which the entrance will have an affordable price that must be paid by the assistants, make people aware about the need of money in order to carry out activities in the CRCLR House, etc.
- Th CRCLR House of Berlin was established in 2016, so it's a new hub. The lack of experience can sometimes be a weakness when deciding how to deal with certain issues. This is not the strongest weakness of the hub, because the people involved in the CRCLR House is really motivated, and they believe that positive changes can be achieved if they work in the different themes mentioned in the description of the hub. But even if this is not the most important thing to improve, it could be interesting to take action and try to find opportunities. Therefore, contacting other circular economy hubs, going and visiting other hubs to have first-hand information about their way of working different themes, asking for help and advice, increasing their contact and resources list, talking with experts in the themes they work with (finance, textile...), etc. can bring benefits for the Berlin's hub.
- Another point that must be mentioned is that the information about the CRCLR House is only available in English on their webpage. It could be understandable, because nowadays English is a language that almost everyone understands, but it can also be a limitation for someone that doesn't manage that well with this language, therefore, it's also a limitation for the CRCLR House because they are not able to reach all people. But maybe more important than this is that some German people can feel disappointed due to the fact that the information is only available in English and not in German, because maybe it does not seem good

to them that a hub from their own country does not use their own language to communicate and share information. Consequently, offering the possibility to choose different languages, or at least German, can be a good action.

3.8.4 Conclusion

The SWOT analysis shows that the CRCLR House has more strengths and opportunities than weaknesses and threats. That means that generally the hub is doing well and their objectives are being met. If we look to the external part that surrounds the company, there are also many opportunities, such as to have social impact and produce social changes. It is good to mention that the CRCLR House is open for everyone interested on circular economy practices. Besides, the people involved is active and open-minded, they believe in what they do, and they have a shared belief in a circular economy. They have some excellent values, such as co-operation, collaboration and creativity.

But on the other hand, it is a reality that there are some weaknesses and threats that must be considered. The lack of people, lack of money and lack of support are maybe the most important ones. So, it is important to improve these aspects in order to increase the strengths and opportunities of the hub. Some actions have been proposed, which will help to turn the most important weaknesses into opportunities.

When comparing this hub with Topinpuisto, we see that they are quite different hubs. They don't work with the same themes, so it's not easy to identify some possible practices from the CRCLR House that can also be carried out in Topinpuisto. Anyways, it will always be good to contact each other and see how they can contribute to each other. In this case, as both work with things related to the textile industry, they could exchange their experiences. For example, members of the CRCLR House collected 50 bags of unusable clothes and repurpose as insulation for one of their new rooms. This is just one idea of reusing clothes instead of throwing them away.

Topinpuisto, as well as the CRCLR House, also wants to become more famous and be known by the citizens in Turku; to obtain that, some actions proposed in the previous section (turn weaknesses into opportunities) can be used. For example, they can start an innovative and original marketing campaign, and continue announcing the different events and achievements in their social webpages.

3.9 Bluecity

Blue city is a place for innovative and circular entrepreneurs in and around Rotterdam. The hub is situated in the deserted swimming pool 'Tropicana' and has a view over the Meuse. Blue city works together with a dynamic community; from entrepreneurs to researchers and the government and so on. 16 circular companies are already working in Blue city and they all are linking their waste-streams. What means that the output of one company is the input for another company. In this way, they close the loops and build all together the city and economy of the future. Blue city will open their doors for public in 2019. (BlueCity, 2017)

3.9.1 First steps to a circular world

Blue city works with local products, believe in cooperation instead of competition, they create endless circles of value, create jobs, reduce waste by seeing waste as a valuable resource and they are building social capital without exhausting the environment. In this way, they create an unbreakable ecosystem and this is circular economy. (BlueCity, 2017)

Blue city is building a new city where waste does not exist. Over the next years they will try to expand the number of companies in Blue city. They will show the world how it can. Or better: how they have to do it. They give the perfect example and maybe the first step to a circular world. (BlueCity, 2017)

'This is where we create endless circles of value.

We learn from nature. In nature, there is no waste.

Output for one is input for the other.' - BlueCity



3.9.2 BlueCity is getting real

Even BlueCity is not open yet for public and some might think that it is just an utopia, there is already happening a lot. There are now working already 16 companies and they all are linking their waste-streams on many manners. In the paragraph below the circular economy in BlueCity is shown with a short example. (BlueCity, 2017)

The coffee waste of the Aloha Bar-Restaurant that is located in BlueCity is a nutritious source for the mushrooms of Rotterzwam. Spireaux use the CO₂ that is released during the process for the production of Spiralina. Later on, the mycelium is used to make the packaging materials. At the end, people can find the mushrooms that grew on the coffee waste of Aloha on the menu of the restaurant. This shows a perfect circular circle. And this is only the beginning, there are way more examples to show. (BlueCity, 2017)



3.9.3 SWOT-Analysis

Strengths

- BlueCity works together with entrepreneurs, researchers, local residents, government and education.

Blue city works together with entrepreneurs, researchers, local residents, government and education. All-important elements for a company to have a good connection with them. They are the stakeholders. Because of the fact they work together and have a good relationship they can really make the city of the future.

- Companies are linking their waste-streams: waste is for others nutritious source

16 circular companies are already working in Blue city and they all are linking their waste-streams. What means that the output of one company is the input for another company. In this way, they close the loops and build all together the city and economy of the future.

- Central location & well-known by the population of Rotterdam

Because BlueCity was earlier a famous swimming pool in Rotterdam, it is famous by the population. Because of this, they do not have to put a lot of effort in brand awareness. The location is also very good: near the water, what means that it is easy to get there by boat. (For the population of Rotterdam but also for new international companies.)

- Organized BlueCity tours

BlueCity will organize tours across the 12000 m² circular example city. In this way BlueCity and circular economy becomes accessible for everyone. The visitors can learn and see how the circular city and circular economy of the future is looking like and get responds on their questions like: What they are doing, what is their mission and the most important thing: what is circular economy.

- Rebuilt in a circular way

After BlueCity was a swimming pool, they rebuilt it in a circular way. So now it is presentable for potential clients. Because of the open structure of the building, everyone can see each other. In this way, there is a lot of communication and synergy.

- Working together with the local markets

BlueCity works together with local markets.

- Provide information on webpage and other social media pages

The webpage of Bluecity is built very good with a lot of information about a lot of themes. The structure is very nice and it's simple to navigate. The information is especially in Dutch.

- Open minded about cooperation

BlueCity is now working with 16 companies. All the companies are different. The company is open for everyone who wants to have a look.

- Dynamic community with open-minded entrepreneurs

If you are working there, you are working with people from different companies in the same location. You meet each other during coffee breaks but also when you are doing a little walk in the building.

Weaknesses

- Provide not much information in English on their webpage and other social media pages

The information on the website is especially in Dutch. Only one page 'About BlueCity' is in English. This is the most important thing but other pages are only available in Dutch.

- It is still not open for public

BlueCity will open his doors in 2019 and has only 16 companies that are working there. It is still in the first phase. We are not sure if it will be a big success.

Opportunities

- Not much competition

More and more companies are focusing on being environmentally friendly. But BlueCity is way more developed and is now operating in the market with blue economy. There are not much companies in the Netherlands that operates with circular/blue economy. What means that there is not much competition for the moment.

- Attractive for everyone

People are focusing more and more on the environment. The world is 'dying' because people are using too much energy. The fact that we want to do our best and the fact that we are focusing more on the environment than ever before, makes BlueCity attractive for everyone.

Threats

- Maybe upcoming competition

As told in the opportunities, there are not much companies that operate in the circular economy. But people are focusing more on the environment what means that more and more companies are going to focus on the environment. The competition in this market will grow. So, it is important for BlueCity that they have to keep an eye on the trends in the market and that they have to develop every single day. In This way they can always be one step before the other companies.

- Small circular company, still in the first phase

BlueCity is a small circular city. There are for the moment only 16 companies that are operating in BlueCity. If they want to operate in the world market, they have to know that there are way more bigger companies that operates in the circular economy. A lot of competitors offer a broader and better offer.

3.9.4 Conclusion

BlueCity is a small HUB for circular economy. They are still in their first phase. But for the moment they have a very good location, great ideas and a lot of possibilities to grow further. BlueCity is not comparable to Topinpuisto because of the growth. BlueCity is way smaller. But there are still some things that Topinpuisto can learn from BlueCity.

BlueCity is open-minded and wants to show the world what they are doing, with who they are operating and how they are working. They are organizing BlueCity tours. In this way BlueCity and Circular economy becomes accessible for everyone. Topinpuisto organize also 'tours' but in a different way. We did once a tour with our team and they just showed a video but they did not really show the company. It would be good for Topinpuisto to really show the company.

3.10 Circular Economy Village in Riihimäki

The Circular Economy village in Riihimäki was finished in 2016 and is the first of its type in whole Finland. In the city, you can find an Eco Refinery and a Bio Refinery, which both processing waste into recycled materials or heating and electricity. The aim of this village is to decrease their waste production, decrease their consumption and providing biogas, heating or electricity at the same time.



3.10.1 SWOT-Analysis

Strengths

- First concrete step

The Circular Economy village in Riihimäki was the first concrete step towards Circular Economy in Finland.

- Supplied waste will be processed

In Riihimäki, the supplied waste will be processed into recycled plastics, building material, heating, electricity and as well in biogas.

- High recycling rate

In this case, we can find an optimal recycling rate for each material and also the utilization rate is very high, between 96 and 98%.

- Eco & Bio Refinery

In Riihimäki, we can find an Eco Refinery, which process is unique in whole Finland. Beside the Eco Refinery, there will be also a Bio Refinery, which will be also the first one of its type in Finland.

Weaknesses

- First village

it is the first village of its type in whole Finland. They did not have a clear former knowledge of that things, they needed. They could have been in the need of international specialists of Circular Economy to even realize their project.

- “still” in initial phase

One another risk or critical point is that it is “still” in its initial phase and for that reason it might be very expensive, because they maybe have to do a lot of Research & Development.

Opportunities

- Expanding

One simple opportunity for every kind of business is to expand. They could try to bring up same or similar pilot projects in other villages, which are up for a cooperation and chasing the same goals.

- Relationship to community

Another great thing is that they easily can build a great relationship to the community, because the community is pretty a lot involved in this system.

- Trading community

If they would be once in the need of a particular waste fraction it would be a nice idea to develop international trading communities with other Circular Economy hubs nearby or even in other countries.

- Great example

Through their project, they can be a great example for other villages in Finland with the same or a similar goal.

Threats

- Potential competitors

For the reason that the Circular Economy village is for now the only one of its type, they have to worry about the future and the coming potential competitors, when Circular Economy becomes more popular.

- Legislation changes

Through legislation changes and changes in the law in general, it could lead to difficulties and expensive rebuilding's of technology.

- Exceeding of capacity

When Circular Economy becomes more popular and the demand grows as well, it might cause an exceeding of available capacities.

- Weaknesses into opportunities

The fact, that they are the first and only village in Finland makes them unique. They could make a lot of being the only one. The potential high costs are definitely negative, but the costs could be decreased in some way.

- How?

For being unique they have a special reason to get attention from the media, the community and also from the government. That attention can be used to raise awareness of environmental problems or also raise awareness on Circular Economy. That is easy to connect with the second weakness of the village, the high costs. Through that more

and more attention they get, potential sponsors could appear and help the village to get developed and investing their money carefully in the right sectors.

3.10.2 Conclusion

As we can see from the SWOT-Analysis, the Circular Economy Village in Riihimäki has referred to my researches more strengths than weaknesses and therefore I would call Riihimäki as a great example for other potential similar projects. From the weaknesses, we can see that they are pretty easy to turn into opportunities, but it is not that easy, of course it needs some effort in it. In the end, I would say that the Circular Economy village made a great, but also brave step towards Circular Economy and leads the way for similar projects in Finland and whole EU.

4 RESULTS FOR TOPINPUISTO

4.1 Conclusion

As a conclusion, all these hubs, whether they are industrial, virtual or community-based they are based in circular economy, so they are very helpful to reduce the amount of waste that is landfilled and to save water, energy and other resources.

All the hubs, have different ways of working that could be very interesting for Topinpuisto and in order to find which ideas could be the most useful ones for this company, it has been done a SWOT analysis for each hub.

All the hubs have their own strengths, weaknesses, opportunities and threats. In most of the cases they have more strengths than weaknesses, and this means they are doing well. But doing some changes in the hub, there is the chance to turn the weaknesses into opportunities.

After doing the SWOT analysis for every hub, there have been listed some proposals for Topinpuisto, which are going to be explained in the next section.

4.2 Proposals for Topinpuisto

After describing and analysing that many hubs, some proposals for Topinpuisto have been done. We will divide the proposals in different hubs, starting with Eko-REC. An aspect in which Topinpuisto should focus could be that Eko-REC produces goods manufactured with 100% recycled raw material that are 100% recyclables.

Furthermore, looking to Kalundborg the proposal is different. This case the symbiosis can be a good choice for Topinpuisto to develop a little more in some parts of the system. In this hub, they do not create any waste, that is, the waste of one is the raw material of the next one. In Topinpuisto they can find some connection among all the companies that are taking part here. It could be good for them to contact with the Kalundborg symbiosis in order to get more information about the system that they are using and how they have become one of the most important symbioses. They can also analyse the type of waste that the companies that are working with Topinpuisto and taking into account the amount

of it and who can get advantage of it, they should create a waste chain in order to delete all type of waste that it can be created.

On the other hand, even if the REMONDIS HUB is not completely comparable to Topinpuisto, there are some issues, Topinpuisto can use.

Some strengths of REMONDIS, e.g. the information, which are provided on the webpage in different languages and the teaching project at the kindergarten and schools, should be considered by Topinpuisto. REMONDIS has a very well-developed internet platform in English as well as German language. Education materials and advice how to implement it can also be found there. To contact the German company for getting more and more detailed information can be a great opportunity for Topinpuisto, as REMONDIS is open minded to cooperate with other companies.

Focusing on the virtual hubs, WASTEMAPPING and the Indian hub, Topinpuisto can take some ideas too. For example, if they add a section to the webpage where different companies can offer and find different materials, more companies will get involved in the project and the participation will rise as it is very comfortable and easy to use. One of the biggest issues of Topinpuisto is that it is not known among the citizens. To solve this problem the easiest and most efficient solution is creating some *app* or improving their websites for the citizens. In the 21 century, the usage of new technologies is essential, at least to attract the attention of people.

Talking about the CRCLR House, Topinpuisto can have several ideas too. They can start an innovative and original marketing campaign, and continue announcing the different events and achievements in their social webpages.

So, as it is easily seen in this chapter, several ideas for Topinpuisto have been proposed. Some might be easier, others more difficult, to implement, but they will help improving it.

5 REFLECTION OF THE REHA-TEAM

The method that we have been using during this semester has been something new for some of us, it has been a totally different way of working. It promotes collective learning and makes us communicate a lot more among us in order to know who is doing which part of the work as well as give some feedback to each other to see if we are doing it the right way or whether it is necessary to improve something. All of us have different background, some are engineers, other are business people, some others know about economy, so we could share the knowledge that we have and give different point of views and we also could solve the problems that we have had without any problem since everyone had a different solution for them, because of the type of knowledge.

We have been very active during all the semester, we have had many meetings with the teacher but also just us, in order to discuss about the topic and be able to present it in a clear way the following meeting. The atmosphere was so good between us and that was helpful in order to do a good job, we have been working hard for this project helping each other anytime we could, sharing the information that could be interesting and useful for everyone and trying to make the others feel comfortable and important always.

Even though at the beginning this was a little bit confusing, while time was going on we have realised that we have been able to face all the challenges that we have had during the path. We noticed that we can do it by ourselves, that if we work as a group every little challenge can be solved without any problem with an active behaviour and positive attitude. Nevertheless, we feel that it has to be mentioned that the participation level of everyone has not been the same, and that was a bit difficult to manage but in the end, it was not a problem at all. We could understand that it was not possible to meet the 10 of us in every meeting, because our timetables are totally different and considering that we are exchange students, we have been travelling a lot during these months, so that, we could totally understand that the involvement of each one could be not the same.

We did not know each other before meeting for this project and it was good to get to know more people, even more, some of us have a very close friendship now, thanks to this system. It was so good to take part in this project because of many reasons; the people that we have met, the topic that we have been working on, the challenge Turku goes green - it has been a positive experience for all of us, a totally different way to work that it has been worth it.

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