# Concluding summary report

Based on regional screening reports

## Reported by


| | |
|---|---|
| PROJECT PARTNER: | Dansk SymbioseCenter / Symbiosis Center Denmark |
| PP-NUMBER: | PP1 |
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| DATE: | 22-10-2020 |

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## Background:

This report is summarizing the screening activities, results and learnings from all partners involved in screening activities (PP1, PP3, PP4, PP5, PP6, PP8, PP12) and is part of fulfilling the deliverables of work package 2 - activity 2.1.

## Introduction:

All partners have been conducting screening activities within their own region including maps. More detailed information on individual summary report can be found as appendixes to this concluding report. This report focuses on combining the learnings found in the different regions.

## Method:

Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark). Access to the screening tool template and the supporting webinar can be granted by contacting the Lead partner Dansk SymbioseCenter, Kalundborg Municipality (https://symbiosecenter.dk/en/project/bis/).

## Results:

Targets for the number of screening performed, was set to 7-10 for each partner region, therefore an overall total of 49-70. This target was reached with a total of 70 screenings.

A target for screening of SME's was set to ≥ 50% (35 SME's) of the total number screened. This target was exceeded, reaching a total of 73% (51 SME's).

## Learning points:

Each partner has identified major learnings from their own screening activities. These are here combined into overall learning for the project area – the Baltic Sea region.

PP1: Virtual screenings have made it possible to perform screenings despite COVID-19 and has led to savings on transportation and time consumption. Because of that coordination and planning has been easier (less effort). However, the physical meetings cannot be excluded entirely as they support the relation building and details during the physical tour in the production.

Great benefit from introducing match-making potentials during the screening activities. Screening in an effective means to recruited relevant companies for match-making events

PP3: Many businesses are interested and know about sustainable production. One barrier could be if a company does not own but rent a production facility - it could be risky or sometimes impossible to realize the necessary optimizations in the buildings.

PP4: A barrier can be lack of specific knowledge and how to finance the implementation of the symbiotic business model

PP5: The cost of handling waste as waste can be too low to create a financially sound symbiotic business case. Through the screening process several existing examples of internal symbiosis (reuse, recycling) have been identified.

PP6: Although the management already may have established relationship with the company, they should still include the first initial contact with the company preparing them for the interview procedure and aim of the interview. The interview process can be improved and should be a dynamic approach where the facilitator/screening agent can adapt to the specific company or case.
By introducing the symbiosis approach industries often realize that resource optimization and collaboration with other businesses could be of value for their own future business development.
A business has focus on its core production and need external facilitation and advisers in order to realize their own potentials, and to implement this.

PP8: Companies are more open for cooperation with people and entities they already know. It is also an incentive for them, if companies from related industries are involved in the study and they can contact them more easily, e.g. by getting involved in matchmaking events. Mutual trust is very important, especially when we want to obtain sensitive information. It is important to be in regular contact with companies.

PP12: Realizing industrial symbiosis is not an easy task. Project partners have gained knowledge and practical skills on how to screen companies and facilitate industrial symbiosis. Performing a very detailed screening will create a wider foundation towards identifying potentials.
In order to successfully mobilize businesses into a screening activity, additional communication strategies can be relevant, such as information on local web-sites articles in different journals, newsletters etc.

Local stakeholders and networks are crucial for the implementation of planned activities. It is important that the company owner/director understands the potential of including the mindset of industrial symbiosis in their future business as a sustainable and financial business model.

## Conclusions and recommendations:

To conclude, we have identified the following necessary requirements in order to support the implementation of industrial symbiosis:

- Collect information on businesses, residual streams and raw materials
- Identify potentials for future symbiotic green business models
- Facilitating match making between businesses
- Embedding the symbiosis mind set in the company management
- Planning implementation to secure financing, internal or external resources and knowledge to realize implementation

We recommend that the screening approach is continued as part of a facilitation of companies to realize industrial symbiosis. In order to realize this the task should be embedded into a local organization with the relevant qualifications and resources. Capacity building and match making should be supported through a national as well as an international network of facilitators.

## Appendix:

- PP1 – Dansk SymbioseCenter – Regional Summary Report (*Denmark*)
- PP3 – Ressource City – Regional Summary Report (*Denmark*)
- PP4 – Paper Province - Regional Summary Report (*Sweden*)
- PP5 – Digipolis – Regional Summary Report (*Finland*)
- PP6 – Trøndelag County – Regional Summary Report (*Norway*)
- PP8 – Gdansk University – Regional Summary Report (*Poland*)
- PP12 – Tyreman Group – Regional Summary Report (*Russia*)

# Screening report – Regional summary

Central Denmark Region and Region Zealand in Denmark


| | |
|---|---|
| PROJECT PARTNER: | Dansk SymbioseCenter / Symbiosis Center Denmark |
| PP-NUMBER: | PP1 |
| CONTACT PERSON: | Per Møller (per.moller@kalundborg.dk),<br>Thomas Nielsen (thomas.nielsen@kalundborg.dk) |
| DATE: | 02-07-2020 |


## Background:

This report is summarizing the screening activities, results and learnings from Central Denmark Region (Region Midtjylland) and Region Zealand (Region Sjælland) in Denmark and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first Peer-to-Peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
|---|
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>Overall the approach presented at the Peer-to-peer meeting in Kalundborg was used as the base-line approach.<br>Due to the fact that we had experience with screenings and have developed the screening tool, we were able to initiate first contact with enterprises and execute screening activities at an early stage. |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>• Contact to company (motivate for participation, set a date for the screening)<br>• Company receives a mail with detailed request on data needed for the screening protocol<br>• Completing screening (physical dialogue and production tour at site, signing of collaboration agreement)<br>• Company receives screening report with identified potentials and focus points |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>During COVID-19 we have successfully used virtual tools to substitute for the physical screenings (Zoom, Skype, Teams, phone). |
| d) Describe lessons learned based on descriptions a to c:<br>Virtual screenings have made it possible to perform screenings despite COVID-19 and has led to savings on transportation and time consumption. Because of that coordination and planning has been easier (less effort). However, the physical meetings cannot be excluded entirely as they support the relation building and details during the physical tour in the production.<br>Great benefit from introducing match-making potentials during the screening activities. Screening in an effective means to recruited relevant companies for match-making events. |

## 2. List of companies screened

| Company | Large/SME |
|---|---|
| A | SMV |
| B | Large |
| C | Large |
| D | SMV |
| E | Large |
| F | Large |
| G | SMV |
| H | SMV |
| I | SMV |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

## 3. Companies contacted

a) How many companies have you been in contact with during the recruiting process?

Number of Large companies: **4**

Number of SME: **5**

b) State the main reasons for a company to reject the screening proposal?

1) Not relevant ("no need – in control", do they understand the concept and its potential for their business?)
2) Timing is off (other priorities, lack of time and resources, not in/out of production)
3) COVID-19

| COMPANY 1: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: A |
| Company address: Kirke Hyllinge |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 29-03-2019 |
| Describe the company, their main business/production and product(s):<br>They freeze dry food products from a range of food producers. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Energy: Surplus heat from freeze drying process (*potential input to a new local district heating grid)<br>2: Energy: Surplus heat from boiler (*)<br>3: Water: Evaporated water (distilled water) from freeze drying for internal reuse (cooling towers) |
| Describe already existing symbiosis, if any:<br>No existing symbiosis – no nearby production site (proximity) |
| Comments and lessons learned from this company screening, in particular:<br>Surprisingly large water residual unexploited. Initially focus on surplus energy. *Beneficial to stay with the overall broad approach! Combine screening tool with physical tour of the production!* |

| COMPANY 2: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: B |
| Company address: Kalundborg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>X Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 02-10-2019 |
| Describe the company, their main business/production and product(s):<br>Cleaning of municipal and industrial wastewater. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Materials: Sludge from biological process as material into e.g. remineralization or bioplastic production, phosphor and nitrogen extraction (fertilizer) |
| Describe already existing symbiosis, if any:<br>- Surface water from the nearby Lake Tissø is used for outdoor cleaning of production areas and utilities<br>- Warm cleaned wastewater is upcycled to district heating via an external heat-pump |
| Comments and lessons learned from this company screening, in particular:<br>Coupling educational activities to the screening process can be a motivating factor for the screened company as well as the stakeholders involved in the educational activity. When you deal with a larger company with several different productions, consider splitting up screening based on specific productions – resulting in clear overview and more detail! |

| COMPANY 3: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: C |
| Company address: Kalundborg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 03- 09-2019 |
| Describe the company, their main business/production and product(s):<br>Production of gypsum plaster boards |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Energy: Surplus heat from production (pre-conditioning and drying) potentially for additional resource in local district heating grid<br>2: Material: Paper-gypsum waste for reuse within paper industry (sample given to Paper Province during Peer-to-peer screening). Specific potential yet to be identified<br>3: Material: Paint collected from spray-painting process – now evaluating potential as direct reuse lower grade paint |
| Describe already existing symbiosis, if any:<br>- Reuse gypsum fraction from used plaster boards |
| Comments and lessons learned from this company screening, in particular:<br>- Coupling educational activities (peer-to-peer) to the screening process can be a motivating factor for the screened company as well as the stakeholders involved in the educational activity.<br>- Involving the right partners may lead to identification of unknown potentials (Paper Province) |

| COMPANY 4: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: D |
| Company address: Kalundborg |
| Large/SME: SMV |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: Pilot production |
| Screening date: 13-05-2020 |
| Describe the company, their main business/production and product(s):<br>Developing process for microbial-based protein production |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Energy: Use of steam from existing local symbiosis for use in processes<br>2: Water: Use of cleaned surface water from existing local symbiosis for use in processes<br>3: Material: Use of upgraded biogas from existing biogas plant and future combination with pyrolysis process<br><br>*Note: above potentials are based on a full-scale production scenario* |
| Describe already existing symbiosis, if any:<br>None |
| Comments and lessons learned from this company screening, in particular:<br>Engaging with new production sectors in an existing industrial symbiosis (IS) network could open for new potential symbiosis models and partnerships. Presenting a tailored value proposition could attract new companies and technologies to the exist IS. |

| COMPANY 5: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: E |
| Company address: Horsens |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 1-11-2019 |
| Describe the company, their main business/production and product(s):<br>Collect and refine used lubricating oil |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy: Excess process heat for local district heating – currently not feasible<br>2: Water: Process water to reduce dust and volume on ash in shipping industry<br>3: Material/Energy: Oil sludge as fuel/heat source – currently handled as waste |
| Describe already existing symbiosis, if any:<br>Energy: Utilize produces water as heat sink by heat exchange to optimize local district heating supply to costumers |
| Comments and lessons learned from this company screening, in particular:<br>Collaboration with local district heating distributor. Dialogue uncovered information on existing symbiosis at national and international level. |

| COMPANY 6: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: F |
| Company address: Kalundborg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 06-11-2019 and 21-01-20 (finalized) |
| Describe the company, their main business/production and product(s):<br>Innovative flexible tubes for the offshore industry – transport of oil, water, chemicals. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Energy: Excess heat from test facility – focus on internal reuse (in production, or heating production facilities)<br>2: Materials: High quality plastic fractions from production discard |
| Describe already existing symbiosis, if any:<br>Receiving district heating from the local Kalundborg Symbiosis |
| Comments and lessons learned from this company screening, in particular:<br>A facility not part of the core production (test facility, utility) could show interesting potentials. Important to get an overview on resources and the coupling of reuse potential on existing and future infrastructure |

| COMPANY 7: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: G |
| Company address: Sorø |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: Recycling and restoration |
| Screening date: 17-03-2020 |
| Describe the company, their main business/production and product(s):<br>Restoring and refurbishing batteries for electrical bicycles and power tools |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials: Used lithium batteries<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any:<br>No existing symbiosis but the business concept is circular |
| Comments and lessons learned from this company screening, in particular:<br>A realized potential in the business concept within refurbishment, despite material complexity and handling time |

| COMPANY 8: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: H |
| Company address: Hillerød |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: |
| Screening date: 27-04-2020 |
| Describe the company, their main business/production and product(s):<br>Via pyrolysis reuse plastic waste to make raw materials for plastic manufacturing |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Materials: can receive a wide variety of used and contaminated plastic<br>2: Materials: output naphta to be refined and then used in products of new plastics<br>3: Materials: output Carbon Black as pigment in various products<br><br>*Note: not in production* |
| Describe already existing symbiosis, if any:<br>Production not yet established. Symbiosis has to be established in order to start production. |
| Comments and lessons learned from this company screening, in particular:<br>Involving start-ups can support the realization of their business model and a sustainable production. This technology opens up for reuse of a wide variety of contaminated plastic waste. |

| COMPANY 9: |
|---|
| Project Partner: Symbiosis Center Denmark |
| PP-number: PP1 |
| Company name: I |
| Company address: Horsens |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: Development of pyrolysis technology |
| Screening date: 28-04-2020 |
| Describe the company, their main business/production and product(s):<br>Development of pyrolysis technology aiming at deliver plug-and-play units. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Materials: can convert various carbon-sources to pyrolysis gas and biochar<br>2: Material/Energy: output pyrolysis gas<br>3: Material: output biochar (fertilizer)<br><br>*Note: not in production* |
| Describe already existing symbiosis, if any:<br>No existing. Could receive various carbon sources and combine with biogas utilities to improve production capacity and quality. |
| Comments and lessons learned from this company screening, in particular:<br>A new technology based on the reuse of residual stream can realize new potentials in partnership with existing production |

# Screening report – Regional summary

Central Denmark Region and Region Zealand in Denmark

PROJECT PARTNER: Næstved Municipality

PP-NUMBER: PP3

CONTACT PERSON: Michael Elgaard – mtelg@naestved.dk

DATE: 03-07-2020

## Background:

This report is summarizing the screening activities, results and learnings from Central Denmark Region (Region Midtjylland) and Region Zealand (Region Sjælland) in Denmark and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
|---|
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>The planning of screening activities started in 4. Q of 2019. We outlined a list of potential companies in cooperation with the local stakeholder Næstved Erhverv.<br>The feedback from the companies is overall positive. Some of the companies were positive and signed the screening invitation. The feedback from other companies was also positive but they did not have the time nor resources to undergo a screening process. A minority of the companies was not interested in a screening.<br>The recruiting process has been very challenging and time consuming due to the Corona crisis. Some companies cancelled the screening process while other companies postponed the screening process. |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>The screening processes for the 7 companies have been very different from one another. Some companies finished the screening process before the Corona crises. Other companies postponed the screening process due to the Corona crisis which have been very challenging and time consuming. An example of this is a company that started the process in December 2019 and ended it in June 2020. |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>There have been no changes made in the screening procedure. |
| d) Describe lessons learned based on descriptions a to c: |

2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | Large |
| B | SME |
| C | SME |
| D | SME |
| E | SME |
| F | SME |
| G | Large |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

3. Companies contacted

a) How many companies have you been in contact with during the recruiting process?

Number of Large companies: 5

Number of SMEs: 10

b) State the main reasons for a company to reject the screening proposal?

The Corona crisis.

Lack of time and resources.

Small quantities of waste and resource streams.

c)

| COMPANY 1: |
|---|
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: A |
| Company address: Næstved |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 29-05-2020 |
| Describe the company, their main business/production and product(s):<br>The company offers all types of asphalt surfacing and maintenance work on highways, by-roads, municipal roads, airports, car parks and industrial areas. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy and materials: The company is in the industry district Ydernæs with several other companies with productions plants etc. There may be potential of creating a symbiosis within energy production, surplus heat and waste management. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular:<br>*The company has focus on recycling and has launched a BSM-machine reusing the existing asphalt.* |

| COMPANY 2: |
|---|
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: B |
| Company address: Næstved |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>X Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 05-03-2020 |
| Describe the company, their main business/production and product(s):<br>The company provides new electrical installations and maintenance of existing electrical installations. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials: The company sorts their waste in 23 different fractions. The ambition is to inspire other companies in the nearby industry area and in Næstved Municipality to sort their waste in different fractions. The result is waste with higher purity and better quality as well as greater amounts of waste volumes ready to recycle. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular:<br>The company is motivated to increase the level of waste recycling and to inspire other companies to sort their waste. |

| COMPANY 3: |
|---|
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: C |
| Company address: Næstved |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 19-02-2020 |
| Describe the company, their main business/production and product(s):<br>Designing and manufacturing of ventilation equipment and fans |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy and materials: The company is in the industry district Ydernæs with several other companies with productions plants etc. There may be potential of creating a symbiosis within energy production, surplus heat and waste management. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular:<br>The company is involved in a project funded by The Danish Environmental Protection Agency. The aim of the project is to reduce and optimize the resource consumption. |

| COMPANY 4: |
| --- |
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: D |
| Company address: Næstved |
| Large/SME: SMV |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: Car reuse and recycling |
| Screening date: 18-02-2020 |
| Describe the company, their main business/production and product(s):<br>Car reuse and recycling |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>The company is in a small village outside Næstved and therefore lack potential of symbiosis. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular:<br>The company has identified 5 waste fractions with recycling potential. The plan is to investigate the level of recycling potential with one of the waste fractions. |

| COMPANY 5: |
| --- |
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: E |
| Company address: Holsted |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 08-06-2020 |
| Describe the company, their main business/production and product(s):<br>Delivers creative forging and machine solutions |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy and materials: The company is in the industry district of Holsted with several other companies with productions plants etc. There may be potential of creating a symbiosis within energy production, surplus heat and waste management. |
| Describe already existing symbiosis, if any<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular:<br>The company has focus on material and energy consumption and waste management. |

| COMPANY 6: |
|---|
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: F |
| Company address: Maglemølle |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 14-11-2019 |
| Describe the company, their main business/production and product(s):<br>Producer of assistive devices and furniture for people with disabilities as well as equipment for occupational therapy and physiotherapy rehabilitation. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy and materials: The company is in the industry district Maglemølle with several other companies with productions plants etc. There may be potential of creating a symbiosis within energy production, surplus heat and waste management. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis |
| Comments and lessons learned from this company screening, in particular:<br>The level of heating costs is high. Changing the heating system will reduce the costs. However, it requires both an investment from the company and an approval from the owner of the rented plant. |

| COMPANY 7: |
| --- |
| Project Partner: Næstved Municipality |
| PP-number: PP3 |
| Company name: G |
| Company address: |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 28-05-2020 |
| Describe the company, their main business/production and product(s):<br>A leading provider of processing and packaging technology to the food and pharmaceutical industries. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>The company is in the village Sandved outside Næstved and therefore lack potential of symbiosis. |
| Describe already existing symbiosis, if any:<br>No existing symbiosis. |
| Comments and lessons learned from this company screening, in particular<br>The company has focus on material and energy consumption as well as waste management. |

# Screening report – Regional summary

Värmland region in Sweden

| | |
|---|---|
| PROJECT PARTNER: | Paper Province |
| PP-NUMBER: | PP4 |
| CONTACT PERSON: | Magnus Persson, m.persson@paperprovince.com |
| DATE: | 22-10-2020 |
| VERSION: | 02 |

## Background:

This report is summarizing the screening activities, results and learnings from the Värmland region in Sweden, and is part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
|---|
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>First, we had an internal discussion about our member companies and other regional companies that we know of and that we believe have interesting streams. We created a list of potential companies to contact. But we wanted to reach out to more companies. So, we had different outreach activities:<br>• Meeting with the other regional cluster organizations<br>• Meeting with other regional organizations<br>• Discussion with some municipalities and a single discussion with Torsby Municipality and that meeting resulted in some more companies.<br>To reach out to companies in the other municipalities we attended in a seminar that were arranged by Region Värmland. It was a concept of three meetings in the same area, we attended in the first information meeting in three different places (north, west and south in the county). |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>First a general information to get the interest from the company. Then a first meeting (pre-screening) at the company to tell them about the project and show them the screening material. After that a screening meeting to start working with the data. The coming work is done on distance. The screening requires many shorter meetings over a longer time. |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>From the screenings/meetings so far, the focus on the discussion has been on the different streams (Energy, Water, Material) but also on other symbiosis possibilities like Air, Competence, Logistics. Less focus has been on the company's Business model. |
| d) Describe lessons learned based on descriptions a to c:<br>It takes time to build trust. It´s important to find right people with an interest inside and waste streams. Some doesn't want to discuss money/earnings and business plan. If it´s hard during "normal" time it has been even harder during covid-19. |

## 2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | SME |
| B | SME |
| C | SME |
| D | Large |
| E | Large |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

## 3. Companies contacted

a) How many companies have you been in contact with during the recruiting process?
   Number of Large companies:
   Number of SME:

b) State the main reasons for a company to reject the screening proposal?
   Other prioritizes, don´t understand what they will gain in doing screening of waste when they need to prioritize their core business (sales, production, product development…). Small organizations with limited resources. Other main focus areas during covid-19.

| COMPANY 1: |
| --- |
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: A |
| Company address: Torsby |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 18-11-2019 |
| Describe the company, their main business/production and product(s):<br>Family-owned business that started 1982. They produce jams, marmalades, jellies, fruit drinks, juices, fruit soups and fruit compotes. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>Can do some optimization work internal to lower the amount of waste, but after that there are two areas that is of most interest and that is the hot water and the sugar in the water.<br>1: Water: clean cooling water - potential as heat source in district heating<br>2: Water: high sugar content in wastewater – potential in bioplastic manufacturing<br>3: Material: mix garbage of paper and plastic |
| Describe already existing symbiosis, if any:<br>• Infrastructure collaboration with Torsby municipality that owns the building.<br>• In the factory there is a boiler that supports the production with steam and a heat exchanger for delivering of heat to the offices and locals. The boiler is owned by the company but the burner in the boiler is owned by another company.<br>• Wastewater with high content of sugar is sent to nearby municipality for biogas production |

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| Comments and lessons learned from this company screening, in particular:<br>Big interest in optimizing the process but don´t have the tools to do it and the incentive due to relative low cost compared to other costs. |

| COMPANY 2: |
|---|
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: B |
| Company address: Torsby |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 18-11-2019 |
| Describe the company, their main business/production and product(s):<br>Family-owned business. They have two different focus areas; packaging and lifting equipment. Within packaging they produce packaging machines, designing forming tools to the machines but they also produce plastic packing (blister pack). The other area is vacuum lifting equipment. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>Production facility rebuild during our visit; lowering energy consumption with insulation, new ventilation and heating system. They don´t own the locals. The production could be more optimized but low quantity series manufactured.<br>1: Energy: hard to see at the moment due to rebuild but interested in using waste heat from nearby industries if possible (the first screened company have waste heat and are close by) and look into solar power. |

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| 2: Material: want to go from fossil-based material to biobased; interested to discuss establishing a testbed for biobased forming with big packaging supplier and their biobased material.<br>3: Material: some plastic fractions that could be used to other things than energy |
| Describe already existing symbiosis, if any:<br>No known |
| Comments and lessons learned from this company screening, in particular:<br>Is investing for the future and doing some energy investments at the same time. Big issue for the future is changing raw material from fossil-based plastic to biobased. Like to find cooperation with other regional industries. Open to use waste heat from nearby industries. Company one has a lot of waste heat and are located nearby so one interesting connection to make. |

| COMPANY 3: |
|---|
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: C |
| Company address: Kristinehamn |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: Pilot machine/plant |
| Screening date: 14-02-2020 (pre-screening); full screening not completed at this moment |
| Describe the company, their main business/production and product(s):<br>Start-up company (2012) with a new process of recirculating clothes. They are starting with collecting jeans and converting them to new fibers, the dried pulp is then sold to textile industry. The pilot plant started to get build in 2017 and is still under reconstruction |

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| and will be until they find an optimized production. After that they will have an annual production of 7000 ton. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>Since we only have done the pre-scanning, we have not defined the amounts yet and when we get the figures it´s not easy to use them since it´s a pilot machine with continues rebuilds. But if you should affect the final design it´s now. What we discussed is what will be some of the waste streams and below is the result (no order).<br>1: Water: the fibers are washed so there are different colors in the water that could be used<br>2: Material: synthetic fibers are taken away so there will be a fraction of that<br>3: Material: metal that is sorted away from the clothes<br>4: Material: low quality fibers (a good product but can´t be used in textile industry) |
| Describe already existing symbiosis, if any:<br>The pilot machine is established in an empty local owned by Akzo Nobel. They get steam etc. from their production. |
| Comments and lessons learned from this company screening, in particular:<br>It´s interesting to screen a pilot plant with no fixed data available. Possible streams that are found could in the future machine be sorted out directly if they are found valuable. |

| COMPANY 4: |
|---|
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: D |
| Company address: Karlstad |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication |

| |
|---|
| X Other: Waste management and recycling |
| Screening date: 14-02-2020 |
| Describe the company, their main business/production and product(s):<br>The company handle many different waste and recycling materials at ten own sites. They have own landfill activity and sell soil and soil improvement products. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>They are interested in finding new raw material fractions and also to look into new technology to use.<br>1: Material: Bio sludge from p&p; no use today but have ideas<br>2: Material: Mechanical pulp is used for soil improvements<br>3: Material: Sludge of calcium carbonate is used in agriculture |
| Describe already existing symbiosis, if any:<br>Is linked to many pulp&paper mills by using their side streams and turning them into new products for the market. They also have tool called Pinpointera; digital service that matches soil from remediation projects with Sweden's largest network of recipients. |
| Comments and lessons learned from this company screening, in particular:<br>A company in the circular economy using side streams from manufacturing units and creating new products out of it for the market. |

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| COMPANY 5: |
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: E |
| Company address: Skoghall |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication |

| |
|---|
| □ Other: _____ |
| Screening date: 17-12-2019 |
| Describe the company, their main business/production and product(s):<br>Pulp and paper mill outside Karlstad, they produce consumer packaging board (875 000 tonnes) for liquid and dry food packaging. Founded in 1917 and has 700 employees. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>At the screening we discussed the overall streams at the mill and then we concentrated the discussion on streams with high potential and the ones they want to find a solution of.<br>1: Water: bio sludge and chemical sludge from wastewater<br>2: Material: ash from boilers<br>3: Material: Green Liquor dregs<br>Are involved in different research projects regarding those side streams but no solution yet. |
| Describe already existing symbiosis, if any:<br>Many different symbioses ongoing now and from past. Here are some listed that are ongoing:<br>• Econova uses their bio sludge and ash to make soil<br>• Karlstad Energy uses their waste heat for district heating<br>• Collaboration within the cluster Paper Province regarding research, education…<br>• Collaboration with other forestry companies regarding wood supply to minimize transportation<br>• Collaboration with Tetra Pak that is located in the same factory. Tetra Pak is converting the company's material. They collaborate around many things; as sharing personnel and logistics. |
| Comments and lessons learned from this company screening, in particular:<br>Open and interested in finding new solutions for their side streams. Many different symbioses could be established around the big amount of side streams. |

| COMPANY 6: |
| --- |
| Project Partner: Paper Province |
| PP-number: PP4 |
| Company name: F |
| Company address: Karlstad |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>X Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: (no screening yet) |
| Describe the company, their main business/production and product(s):<br>Karlstad municipality owned energy company with two combined heat and power plants. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1:<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any:<br>…… |
| Comments and lessons learned from this company screening, in particular:<br>…… |

# Screening report – Regional summary

Sea Lapland region in Finland


| | |
|---|---|
| PROJECT PARTNER: | Digipolis |
| PP-NUMBER: | PP5 |
| CONTACT PERSON: | Tiina Puotinen, tiina.puotinen@digipolis.fi |
| DATE: | 25-09-2020 |


## Background:

This report is summarizing the screening activities, results and learnings from the Sea Lapland region in Finland and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
|---|
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>In the first phase we identified potential companies to participate screenings. We chose companies from different fields of business and from different locations. Screened companies are located in three different areas: (a) Röyttä – Industrial area/park around Outokumpu mill, (b) Karjalahti – industrial area next to Kemi city center and (c) Ajos – industrial area around Stora Enso Veitsiluoto and Kemi harbour.<br>In the second phase we screened three more companies; two sawmill companies from Tervola -area and a prefabricated house manufacturer in Tornio. |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>Companies were contacted by phone. There was variation in the procedure because some of the contacted companies were already familiar with Digipolis and our work and some companies didn't know much about our work. In addition, in some cases we already knew a lot about company's side streams and this screening was more like updating status than starting from zero. On the other hand, in some cases we started from zero.<br>Generally, first we contacted companies by phone and presented our agenda briefly. Then we visited companies. In some cases, we had an opportunity to get familiar with production/machinery. In some cases, we just had a meeting in a meeting room. After the visit we contacted companies by phone and email.<br><br>Three last screenings were conducted by phone and MS Teams due to covid19 situation. |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>Not any specific changes were (intentionally) made. |
| d) Describe lessons learned based on descriptions a to c:<br>…….. |

## 2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | SME |
| B | SME |
| C | SME |
| D | Large |
| E | SME |
| F | SME |
| G | SME |
| H | SME |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

## 3. Companies contacted

a) How many companies have you been in contact with during the recruiting process?
Number of Large companies: 3
Number of SME: 12

b) State the main reasons for a company to reject the screening proposal?
"no time" "call me later" Nonetheless, some companies we decided just visit without any official agenda (just getting know each other) Maybe official screenings will be conducted later.

| COMPANY 1: |
| --- |
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: A |
| Company address: Kemi |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: service for metal industry |
| Screening date: 02-12-2019 |
| Describe the company, their main business/production and product(s):<br>Company offers water jet cutting service. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Material: cutting sludge – this is the most challenging side stream material but not very potential.<br>2: Energy: potential for shared premises<br>3: |
| Describe already existing symbiosis, if any:<br>…… |
| Comments and lessons learned from this company screening, in particular:<br>Challenging side stream is too cheap to landfill, so at this moment, no business potential is recognized. |

| COMPANY 2: |
| --- |
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: B |
| Company address: Kemi |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>x Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 12-12-2019 |
| Describe the company, their main business/production and product(s):<br>Production of wooden stairs |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy: Potential for shared premises (in future)<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any:<br>waste wood is used for district heating (by Kemin energia) |
| Comments and lessons learned from this company screening, in particular:<br>Company produces waste wood, but the amount is not enough for their own heating. |

| COMPANY 3: |
|---|
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: C |
| Company address: Kemi |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: food industry |
| Screening date: 24-10-2019 |
| Describe the company, their main business/production and product(s):<br>Slaughterhouse |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: biogas potential of intestine material<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any:<br>…… |
| Comments and lessons learned from this company screening, in particular:<br>Handling of bio-hazardous side steams is centralized, delivery by trucks. |

| COMPANY 4: |
| --- |
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: D |
| Company address: Tornio |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>X Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 21-10-2020 |
| Describe the company, their main business/production and product(s):<br>Limestone and calcium carbonate producer, also dolomite, quartz and magnesium hydroxide products |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Capture and storage of CO2<br>2: Material side streams area nearly 100 % utilized!<br>3: |
| Describe already existing symbiosis, if any:<br>A lot is done in the field of circular economy / IS. The production site Röyttä is situated next to Outokumpu Oyj. |
| Comments and lessons learned from this company screening, in particular:<br>Potential of CO2 capture is huge, and this could be a whole new business opportunity for the company. |

| COMPANY 5: |
| --- |
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: E |
| Company address: Kemi |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: geo services, mining services, logging tables, warehousing |
| Screening date: 21-10-2019 |
| Describe the company, their main business/production and product(s):<br>Services: geological services, mining services, warehousing |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1:<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any:<br>…… |
| Comments and lessons learned from this company screening, in particular:<br>This company is not actually producing side streams or using/producing a lot of energy/water/wastewater, but they have a lot of buildings, electrical heating, problems with urban runoffs etc. They would benefit if we could find some alternative solutions. |

| COMPANY 6: |
|---|
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: F |
| Company address: Tornio |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _geo services, mining services, logging tables, warehousing_____ |
| Screening date: |
| Describe the company, their main business/production and product(s):<br>production of prefabricated houses |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1:<br>2:<br>3: |
| Describe already existing symbiosis, if any: Not any specific IS was found but the readiness level for cooperate with other actors (even competitors) is high.<br>…… |
| Comments and lessons learned from this company screening, in particular:<br>The production is typically resource efficient and the amount of side streams is little. Plastic wraps are used to cover materials. |

| COMPANY 7: |
|---|
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: G |
| Company address: Tervola |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>X Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: geo services, mining services, logging tables, warehousing |
| Screening date: 31.8.2020 |
| Describe the company, their main business/production and product(s):<br>log house construction |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1:<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any: Oversized logs (one kind of a residue material) are used as a raw material. |
| Comments and lessons learned from this company screening, in particular: The production is typically resource efficient and the amount of side streams is little. Plastic wraps are used to cover materials. |

| COMPANY 8: |
|---|
| Project Partner: Digipolis |
| PP-number: 05 |
| Company name: H |
| Company address: Tervola |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>X Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: geo services, mining services, logging tables, warehousing |
| Screening date: 26.8.2020 |
| Describe the company, their main business/production and product(s):<br>log house construction |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: The amount of plastic wraps is typically big<br><br>2:<br><br>3: |
| Describe already existing symbiosis, if any: |
| Comments and lessons learned from this company screening, in particular:<br>The opportunity for some kind of mobile baling system (plastic wraps) should be investigated. Not any specific IS was found but the readiness level for cooperate with other actors is high. |

# Screening report – Regional summary

Trøndelag region in Norway

| | |
|---|---|
| PROJECT PARTNER: | Trøndelag County Authority |
| PP-NUMBER: | PP 6 |
| CONTACT PERSON: | Per Erik Sørås, persor@trondelagfylke.no |
| DATE: | 19-06-2020 |

## Background:

This report is summarizing the screening activities, results and learnings from the Trøndelag region in Norway, and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
| --- |
| The screening activities was planned in cooperation with the ongoing activities in The THAMS cluster (a regional IS) and the Skogmo industrial park, both engaged in the transition towards a circular economy. The screening was also planned with involvement from NTNU students, where one student also used the data obtained in a master thesis. |
| The contact with the companies were initiated by the cluster/industrial park management, who also joined in the screening activities. Hence appointment where made and the park management and the students interviewed the company. |
| The main difference from the procedures suggested during the Kalundborg training, was the fact that the meetings were fewer, after appointments was made the first meeting was the interview. This was based on the fact that there was already an established contact with the company.<br><br>The follow up dialogue based on the interview results are still ongoing (early stages). |
| In spite of the fact that the management already had established relationship with the company, one should still have made an initial contact with the company preparing them for the interview procedure and aim of the interview. The interview process can be improved vs service providers. |

2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | SME |
| B | SME |
| C | SME |
| D | SME |
| E | SME |
| F | SME |
| G | SME |
| H | SME |
| I | Large |
| J | Large/SME |
| K | SME |
| L | SME |
| M | SME |
| N | Large |
| O | SME |
| P | SME |
| Q | SME |
| R | SME |

3. Companies contacted

All companies being approached accepted to be interviewed

| COMPANY 1: |
| --- |
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: A |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Construction company, delivering buildings. Including consultancy, construction and overall organization of the building site |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, the construction work produces a lot of waste coming both from demolition and construction. Better sorting gives more opportunities for reuse. Today most of the waste goes to energy recovery or deposit.<br>2:<br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company is underway establishing cooperation with a waste collection company aiming at more reuse as an alternative to energy use or deposit. |

| COMPANY 2: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: B |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>X Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| ICT Company delivering general office support, cloud services and some software development |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, the operations require continuous upgrading of equipment and hence it produces a lot of electronic waste.<br>2: Energy, operations consume a lot of energy, fortunately this is supplied through hydropower<br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company now focusing on how to organize their upgrading reducing their waste and allowing for more reuse and material recovery in cooperation with a local waste handling company |

| COMPANY 3: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: C |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Consultancy in particular related to construction of agriculture buildings |
| Screening date: November 2019 |
| Construction and consultancy company, delivering buildings for agricultural use. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, the construction work produces a lot of waste coming both from demolition and construction. Better sorting gives more opportunities for reuse. Today most of the waste goes to energy recovery or deposit.<br>2:<br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company is underway establishing cooperation with a waste collection company aiming at more reuse as an alternative to energy use or deposit |

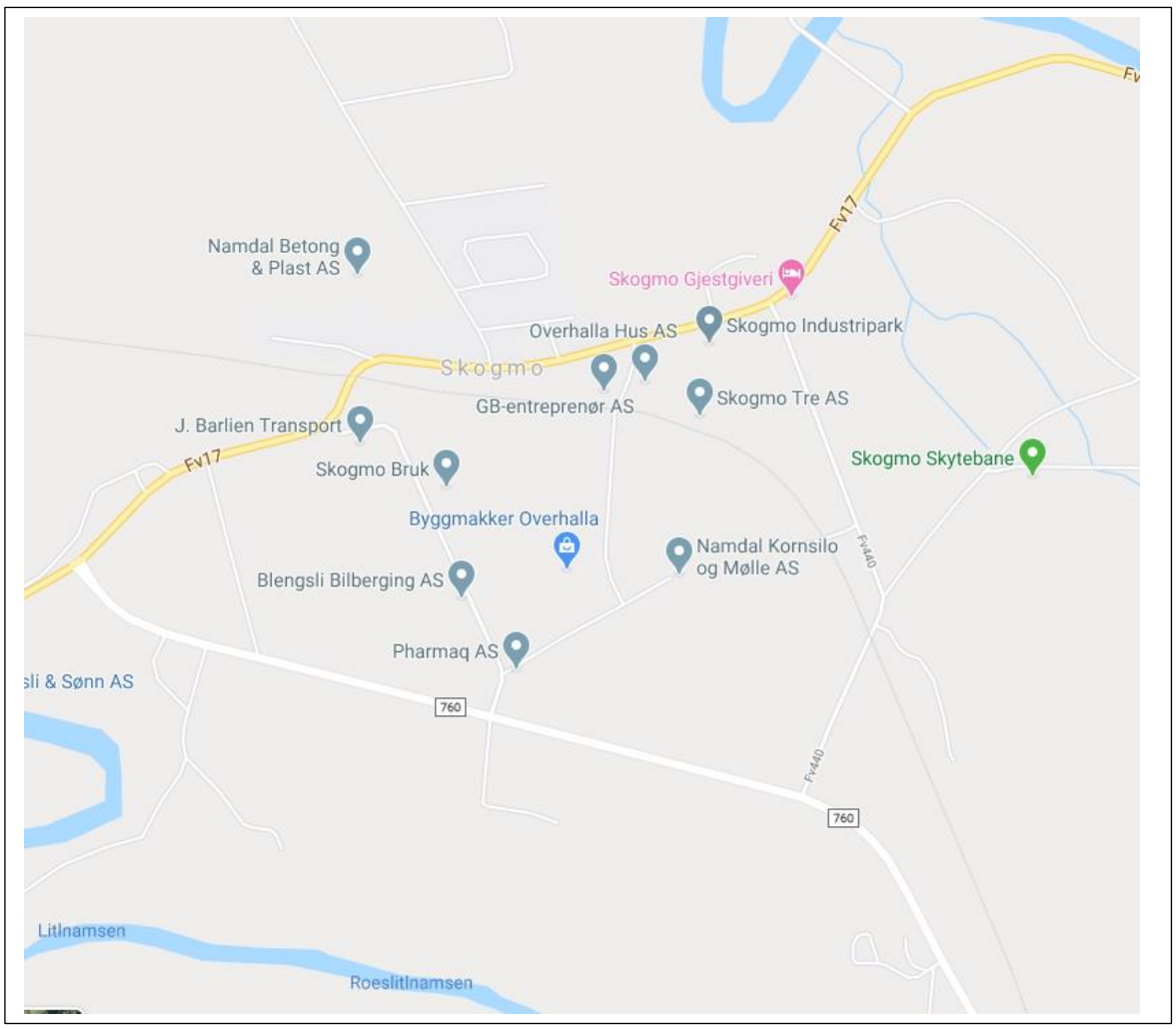
| COMPANY 4: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: D |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>x Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Sawmill delivering pressure treated plank. Combination of cutting local logs and buying precut and ready dimensions |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, the production results in hazardous waste as well as wood waste (sawdust mainly)<br><br>2: Water, the production consumes a lot of water<br><br>3: Energy, the production consumes a lot of energy |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company is underway investigating how resource consumption can be reduced, and some waste can be used by others (sawdust) |

| COMPANY 5: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: E |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Construction company, delivering concrete and plastic pipes (supplied by others) |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, the production of concrete consumes a lot of raw materials.<br>2: Energy, the production consumes a lot of energy<br>3: Water, the production consumes a lot of water |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company is underway looking into substitution of virgin materials by reuse. Also looking into increasing efficiency allowing reduction of energy and water consumption |

| COMPANY 6: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: F |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>X Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Mill, producing animal feed from locally grown grain |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy, the production is energy consuming<br><br>2: materials, the production result in significant waste volumes, biological material<br><br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. Usage of waste is investigated, and some experiments are underway |

| COMPANY 7: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: G |
| Company address: Overhalla |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>Construction<br>X Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| All types of transportation, goods, sand, gravel also some excavation |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Transportation requires energy- fossil energy<br><br>2: materials, utilization of some of the materials handled could be improved<br><br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. Investigation in substitution of energy carrier is underway. Cooperation with customers in improved material handling and potential reuse is ongoing |

| COMPANY 8: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: H |
| Company address: Snåsa |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Producing bottled water for consumption |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials, better handling and reduction of bottles can be done<br>2: Water, reduction of water usage is a goal<br>3: |
| Involved in an Industrial park which have put circular economy on the agenda and want to establish better conditions for industrial symbiosis. |
| The screening process turned out to be a good dialogue and suggestions and ideas for CE approach was exchanged. The company eager to look into better bottle management in order to save material consumption as well as looking into production methods which will reduce water consumption |


Namdal Betong
& Plast AS
Skogmo Gjestgiveri
Fv17
Overhalla Hus AS
Skogmo Industripark
Skogmo
GB-entreprenør AS
Skogmo Tre AS
J. Barlien Transport
Fv17
Skogmo Bruk
Skogmo Skytebane
Byggmakker Overhalla
Namdal Kornsilo
og Mølle AS
Fv440
Blengsli Bilberging AS
Pharmaq AS
760
Fv440
760
Litlnamsen
Roeslitlnamsen

| COMPANY 9: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: I |
| Company address: Orkanger, Norway |
| Large/SME: large |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: August 2019 |
| Producing metallurgical silicon and microsilica. The silicon is used in the production of silicones, production of polysilicon, production of ceramics and as an alloying element to aluminium. Microsilica for refractories applications. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Hot water at various temperatures – potential as heat source in district heating.<br>2) Energy: Steam – potential for electricity-production.<br>3) Materials: Radiklon-dust and quartz subbus (quarry-waste) – potential for briquette-production that can be sold to the private market. |
| Involved in the THAMS cluster and keen to play a role in the IS development.<br>Collaboration with local energy-supplier (Orkland Energi) to distribute hot water for district heating. The biggest customers include a nearby sportspark, a building for public health (Orklandbadet – del av Orkland folkehelsesenter) and new foodprocessing-industry in the area (Norsk kylling). |
| They seem willing to participate in industrial symbiosis-projects, as they also have shown, but the main focus is on their own production at the facility. |

| COMPANY 10: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: J |
| Company address: Orkanger, Norway |
| Large/SME: SME Locally within a LARGE group internationally |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>Construction<br>x Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: December 2019 |
| Receives and recycles metal from private customers, companies and municipalities. Sorting into different fractions and types of metal and selling it to melting plants. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1) Water: Low potential.<br>2) Energy: Low potential.<br>3) Materials: Large potential from the mass of different metals, but not realizable to date. |
| Presently not involved in the THAMS cluster, are however considering to join |
| Seems willing to participate in IS-projects. Metals could be distributed to local actors, but new infrastructure is needed for that to be realistic. |

| COMPANY 11: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: K |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>Construction<br>x Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: June 2019 |
| Intermunicipal renovation company with industry and roughly 130 000 private households as customers. Also responsible for maintaining recycling stations in the municipalities. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1) Water: Low potential.<br>2) Energy: Can make use of surplus energy from local industry.<br>3) Materials: Not relevant. |
| Involved in the THAMS cluster |
| Seem willing to participate and should be very relevant if the ideas of making a large-scale biogas-plant in the area are realized. |

| COMPANY 12: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: L |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: October2019 |
| A construction company working with construction and rehabilitation of buildings as their main area of expertise. Specialized in steel-constructions. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Low potential.<br>2) Energy: Can make use of surplus energy from local industry.<br>3) Materials: Some potential. Read comments. |
| Involved in the THAMS cluster |
| Conscious about their energy-use and material waste. Relevant to look at cooperation with local companies to invest in equipment that can reduce the material waste from their production (Con-Form). |

| COMPANY 13: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: M |
| Company address: Overhalla, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: August 2019 |
| Production of any kind of concrete elements for use in construction. Primarily to customers building apartments, hotels and schools. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Their wastewater can be utilized by Washington Mills, which lies close by.<br>2) Energy: Can make use of excess steam from Washinton Mills for electricity production.<br>3) Materials: Can make lighter concrete-elements with Styrofoam from nearby industry. |
| Involved in the THAMS cluster. Ongoing project with a local food-processing company where they want to use Styrofoam in the concrete-elements to create lighter elements. |
| Seem willing to participate in IS-projects. Potential in all 3 categories. Would like an external actor with responsibility for the projects. |

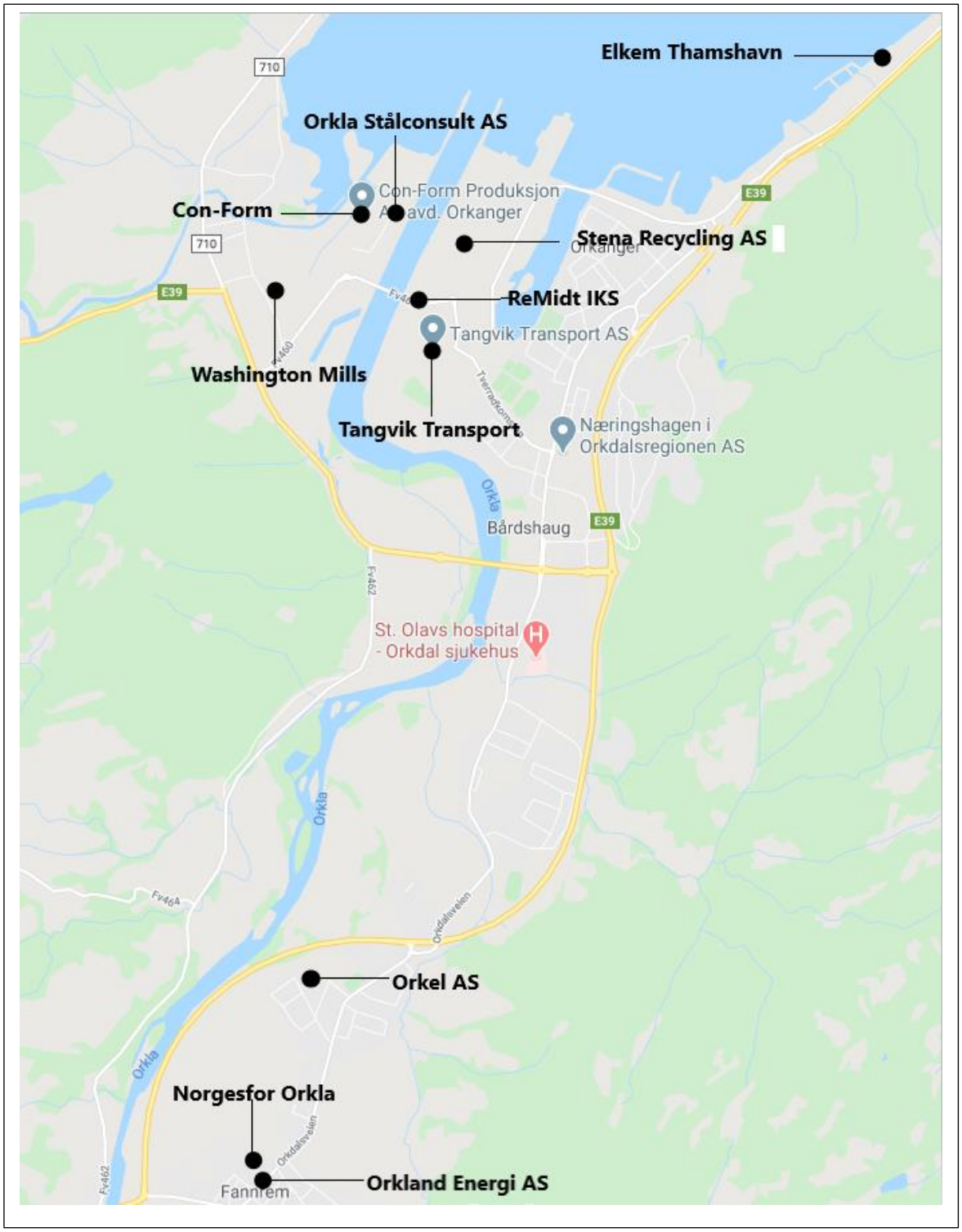
| COMPANY 14: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: N |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: December 2019 |
| Production of fused minerals and silicon carbide. Fused minerals and silicon carbide are widely used as raw materials in diesel-particular filters, ceramic shapes, grinding wheels and many other applications. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1) Water: Hot water at different temperatures can be used by nearby companies.<br>2) Energy: Steam for electricity-production can be used by nearby companies.<br>3) Materials: Waste-materials from the production can be used in briquette production. |
| Involved in the THAMS cluster |
| Big potential for IS-projects in all 3 categories. The company is engaged in exploring the possible collaborations, but an external actor (project manager) would accelerate the process. |

| COMPANY 15: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: O |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>X Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| A logistics and transport company with customers mainly from the food-industry, but also various other companies. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Low potential.<br>2) Energy: Can be a relevant biogas-customer if local plans are realized.<br>3) Materials: Low potential. |
| Involved in the THAMS cluster |
| Can be a relevant actor for IS between other companies, if there is a need for transport of materials between companies |

| COMPANY 16: |
| --- |
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: P |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Production of equipment for private customers within the agricultural sector. Mainly compactors used for harvesting animal feed |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Can be a recipient of excess energy through hot water - district heating.<br>2) Energy: Low potential.<br>3) Materials: Low potential. |
| Involved in the THAMS cluster |
| The production-factory is located just outside the concession-area for district heating. Might be very relevant if the local energy-supplier decides to apply for an expansion of the area. |

| COMPANY 17: |
|---|
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: Q |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production<br>□ Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: January 2020 |
| Production of animal feed for livestock. Recipient of grain from local farmers, and supplier of products like fertilizer, and seeds to the farmers. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Low potential.<br>2) Energy: Could be a recipient of local biogas-production to replace propane<br>3) Materials: Quite a lot of grain-peel available. Possible input to a biogas-plant. |
| Involved in the THAMS cluster |
| A bit more challenging to engage in activities regarding exchange of energy and water given the placement of the facility. |

| COMPANY 18: |
| --- |
| Project Partner: Trøndelag Fylkeskommune |
| PP-number: 6 |
| Company name: R |
| Company address: Orkanger, Norway |
| Large/SME: SME |
| Branch (*select from list or indicate specifikly under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>X Energy<br>□ Utilities<br>Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: November 2019 |
| Local supplier of electric energy and distant heating to both private and public actors. A provider of operations and maintenance of customer centrals. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1) Water: Low potential.<br>2) Energy: Low potential. However, play an important role in optimizing energy utilization in the industry area.<br>3) Materials: Low potential. |
| Involved in the THAMS cluster |
| Given that they are the local energy supplier, they are a big part of the district heating, and a very relevant partner when it comes to facilitating IS with regards to electric energy, steam and hot water. |


Elkem Thamshavn
Orkla Stålconsult AS
Con-Form
Stena Recycling AS
ReMidt IKS
Washington Mills
Tangvik Transport
Orkel AS
Norgesfor Orkla
Orkland Energi AS
Con-Form Produksjon
avd. Orkanger
Tangvik Transport AS
Næringshagen i
Orkdalsregionen AS
Bårdshaug
St. Olavs hospital
- Orkdal sjukehus
Fannrem
710
E39
Fv460
Fv462
Fv46A
Orkla
Orkdalsveien

# Screening report – Regional summary

The northern region in Poland

| | |
|---|---|
| PROJECT PARTNER: | Gdansk University of Technology |
| PP-NUMBER: | PP8 |
| CONTACT PERSON: | Joanna Mioduska, joanna.mioduska@pg.edu.pl |
| DATE: | 04-06-2020 |

## Background:

This report is summarizing the screening activities, results and learnings from the northern region in Poland, and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
|---|
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>An initial planning is not significantly different from the way the screenings were carried out in practice (below point b), because physical meetings in companies took place before the pandemic status was announced. The knowledge of representatives from companies or people associated with them played an important role in communication and finally in screening activities. |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>- A few phone conversations with the aim of inviting a company to the screening. The conversations were about: introducing the topic, determining what the project is about, what the idea is, what is the purpose, what are the benefits of cooperation within industrial symbiosis, what data will be collected, how long the meeting will last, who will have access to the collected data, etc.<br>- E-mail correspondence - sending information about the project, invitation template, information about the data that will be collected, etc.<br>- Final call setting the date and place of the meeting,<br>- Screening in place (1-2 meetings),<br>- Additional phone calls to fill in missing data (applied to 3 companies),<br>- Phone calls regarding screening results,<br>- It is agreed with the companies that post screening meetings are postponed due situation caused by Covid-19 virus. |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>Generally, the procedures were similar. The most time took to convince companies to take part in screenings. The only main difference concerns the delivery of the final version of the screening report to the companies, which is caused by an unexpected Covid-19 situation, however, is understood by all parties.<br>Cooperation with the two companies was not possible, despite telephone calls, e-mail correspondence, as well as recommendation from a mutual friend. |
| d) Describe lessons learned based on descriptions a to c:<br>Companies are more open for cooperation with people and entities they already know. It is also an incentive for them, if companies from related industries are involved in the |

study and they can contact them more easily, e.g. by getting involved in matchmaking events. Mutual trust is very important, especially when we want to obtain sensitive information. It is important to be in regular contact with companies.

2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | SME |
| B | SME |
| C | SME |
| D | SME |
| E | SME |
| F | SME |
| G | SME |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

3. Companies contacted

c) How many companies have you been in contact with during the recruiting process?

Number of Large companies: 0
Number of SME: 9

d) State the main reasons for a company to reject the screening proposal?

Lack of willingness to get involved and spend extra time on not fully understood topic. Epidemic situation caused by the Covid-19 virus, hindered contact with companies and resulted in less interest in the topic.

| COMPANY 1: |
| --- |
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: A |
| Company address: Gdańsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>x Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Electronic assembly |
| Screening date: 09-12-2019 |
| Describe the company, their main business/production and product(s):<br>The company is providing high-quality EMS services, mainly for customers from fiscal, automotive and professional electronics sectors, particularly an access control systems and assembly of electronic devices. They are offering engineering support from the beginning of the project, purchase of components, printed circuit board assembly in lead-free and leaded technology, cover assembly, applying protective coatings and pouring, optical control, testing, labelling, packing with direct deliveries. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials – tin dross (production waste) – potential for further recycling of tin.<br>2: Energy – heat, air with unknown amount – potential for heating of office space. |
| Describe already existing symbiosis, if any:<br>Cooperation with a company that receives tin dross for further recycling instead of treating it as a waste. |
| Comments and lessons learned from this company screening, in particular:<br>The biggest enterprise challenge is energy consumption. |

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|---|
| Devices located in the enterprise's production hall generate heat that is lost, since currently known technologies are not applicable for its further use. The room requires additional cooling.<br>According to the screening results, the enterprise is ready, motivated and has potential for green business development. The enterprise is strongly willing to invest in green business development and sustainability. It has already started working towards the use of photovoltaic systems. |

| COMPANY 2: |
|---|
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: B |
| Company address: Elbląg |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Construction services - demolition etc. |
| Screening date: 02-11-2019 |
| Describe the company, their main business/production and product(s):<br>The company specializes in drainage and road works, earthworks, as well as construction and reconstruction of flood embankments, for both contractors and private investors. The company also provides transport and export services of rubble. |

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| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials - despite the fact that the company does not have its own waste material, it is ready to receipt waste material from construction works for further processing and sale. |
| Describe already existing symbiosis, if any:<br><br>Not recognized.<br><br>The enterprise provides services that are based on a form of cooperation between entities, but this is not a typical industrial symbiosis.<br>The biggest enterprise's potential for participating in industrial symbiosis exists in the area of receiving of residual waste form construction works. The company has the ability for further processing this type of material for further use in construction works. |
| Comments and lessons learned from this company screening, in particular:<br><br>The enterprise is moderately ready for green business development. It recognizes the need to act in the area of green business development and sustainability, among others by adapting to new regulations on transportation by investing in more efficient vehicles, however there is a barrier connected with investment costs. |

| COMPANY 3: |
|---|
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: C |
| Company address: Gdańsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy |

| |
|---|
| □ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Services, other technical testing and analysis |
| Screening date: 08-11-2019 |
| Describe the company, their main business/production and product(s):<br><br>The company is providing laboratory research services in the field of: geology and geotechnics (soil mechanics laboratory, BAT probing), water and soil quality tests, environmental radioactivity and geophysics (Electrical Resistivity Tomography ERT). |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Materials: land soil after research work – potential for minor construction works. |
| Describe already existing symbiosis, if any:<br><br>Cooperation with a company providing geological services – Ingeo – in the field of laboratory research support services.<br>The biggest enterprise's potential for participating in industrial symbiosis exists in the area of delivering residual waste for minor construction works. |
| Comments and lessons learned from this company screening, in particular:<br><br>According to the screening results, the enterprise is ready, motivated and has potential for green business development. The enterprise is strongly willing to invest in green business development and sustainability. For energy conversation, the company has invested in photovoltaics. |

| COMPANY 4: |
|---|
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: D |
| Company address: Gdańsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Restaurants and other permanent catering facilities |
| Screening date: 26-09-2019 |
| Describe the company, their main business/production and product(s):<br>The company is providing meals: wraps, burgers etc., mostly for individual clients, especially for athletes. The company also offers services such as organization of events. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Materials – used cooking oil – potential for machine heating purposes after further processing.<br>2: Energy – heat, air – potential for heating the room during heating season. |
| Describe already existing symbiosis, if any:<br>Contract for the collection of used cooking oil (required by law). |
| Comments and lessons learned from this company screening, in particular:<br>The enterprise has rather weak experience in working with sustainability, but is willing to be involved in green business development. So far, its readiness can be assessed at the moderate level.<br>The most significant resource stream in the enterprise is energy.<br>The company generates small amounts of waste associated with food production, among others because a significant part of products is sold as take away products. |

| COMPANY 5: |
|---|
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: E |
| Company address: Kościerzyna |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>x Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Seed, seedlings – seed center |
| Screening date: 14-11-2019 |
| Describe the company, their main business/production and product(s):<br>The company continues the 60-year tradition of cooperation with farmers from Poland, especially from the Kashubian region in the field of seed production and exchange.<br>The company produces and sells consumable and feed material, among others certified seed for cereals, grasses, seeds potatoes, seeds of legumes, lawn and fodder mixtures, as well as other agricultural seeds. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Energy – heat, air with unknown amount – potential for heating.<br>2: Materials – organic residual – potential that is used internally for heating purposes. |
| Describe already existing symbiosis, if any:<br>The company cooperates with farmers and agricultural producers in the field of reproduction of grass seeds and cereals. It signs contractual agreements with interested parties and provide professional agrotechnical advices. |

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| Comments and lessons learned from this company screening, in particular:<br>The enterprise uses existing green opportunities. It is aware of the benefits that come with green business development and sustainability and according to the screening results, is definitely ready, motivated and has potential for further green business development.<br>The enterprise collects rainwater, uses its wastes for heating purposes and cooperates with the economic environments on the basis on contractual agreements. |

| COMPANY 6: |
|---|
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: F |
| Company address: Gdańsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>x Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>x Other: Works related to the construction of roads and highways |
| Screening date: 22-11-2019 |
| Describe the company, their main business/production and product(s):<br>The company carries out bituminous works on national, voivodship, poviat and commune roads. It manufactures cast asphalt concrete mixes, offer a full range of services related to partial repairs of bituminous surfaces and all types of accompanying works, provide services for the renovation of wells and drains for rainwater and sanitary sewage. |

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| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Energy – heat, air with unknown amount – potential for heating.<br><br>2: Material – concrete, potential for further recycling and utilization in construction works.<br><br>3: Material – rebar – directed to purchase of scrap metal. |
| Describe already existing symbiosis, if any:<br><br>Not recognized.<br>The enterprise provides services that are based on a form of cooperation between entities, but this is not a typical industrial symbiosis.<br>The enterprise has moderate potential for participating in industrial symbiosis. The enterprise cooperates with other companies, which further utilize the produced wastes – concrete and rebar. |
| Comments and lessons learned from this company screening, in particular:<br><br>The enterprise readiness, motivation and potential for green business development can be rated as good. No significant resources were identified for industrial symbiosis development. |

| COMPANY 7: |
| --- |
| Project Partner: Gdansk University of Technology |
| PP-number: 8 |
| Company name: G |
| Company address: Gdańsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>x Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>x Trade<br>□ Medical<br>□ Information and communication<br>x Other: Extraction, trade and distribution of aggregates |
| Screening date: 12-03-2020 |
| Describe the company, their main business/production and product(s):<br>The company deals with mining, trading and distribution of aggregates.<br>It provides aggregates mainly for the construction industry, as well as for companies dealing with aesthetic of green areas and sports facilities. |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br><br>1: Water – used water – the enterprise recirculates water internally.<br><br>2: Energy – reactive power – the enterprise uses reactive power compensation by applying capacitor batteries. |
| Describe already existing symbiosis, if any:<br><br>Not recognized.<br>The enterprise can participate in industrial symbiosis mainly as wastewater receiver. |

Comments and lessons learned from this company screening, in particular:

The most significant resource stream in the enterprise with symbiotic potential is water. The enterprise recirculates water 8-10 times. The enterprise could use water from nearby enterprises or from rooftops, however there is no permission.

The company uses capacitor batteries to eliminate costs for reactive power.
The enterprise is motivated for green business development. The readiness and potential level are rated as prospective.

Screening remarks:

Four of seven enterprises that were screened operate in similar branch:

- G deals with the extraction and sale of aggregates.
- C is involved in, among others, land and soil laboratory analysis.
- F and B deal with road construction.

In this regard, an attempt was made to familiarize companies with each other as part of the project action named *Local business matchmaking event activity*.

# Screening report – Regional summary

St. Petersburg, Leningrad Oblast and Republic of Karelia in Russian Federation

| | |
|---|---|
| PROJECT PARTNER: | Tyreman Group |
| PP-NUMBER: | PP12 |
| CONTACT PERSON: | Aleksandr Belykh, belykh@tyreman.group |
| DATE: | 01-06-2020 |

## Background:

This report is summarizing the screening activities, results and learnings from the St. Petersburg, Leningrad Oblast and Republic of Karelia in Russian Federation, and is a part of fulfilling the deliverables of work package 2 - activity 2.1. Screenings have been performed with the developed screening tool and based on the introduction to its use through a capacity building webinar (June 2019) and an open screening process, conducted as part of the first peer-to-peer event (September 2019, Kalundborg, Denmark).

| 1. Introduction to screening activities |
| --- |
| a) Describe your initial planning of screening activities, including communication with local stakeholders and companies:<br>Before starting screening activities, we planned to form the list of potential participants via:<br>1. participating in local events on different topics (ecology, strategy, business cooperation, etc.)<br>2. official Tyreman Group's website and social networks (e-mailing, Instagram)<br>3. communication with local business supporters and associations (St. Petersburg Cleantech Cluster, Ingria business incubator, St. Petersburg Club of Leaders, St. Petersburg Foundation for SME Development, etc.)<br>4. search via Internet, Google. Maps, etc.<br><br>Implementing this plan, we tried to establish first contact with potential screening participants and sell them the idea of Industrial Symbiosis. |
| b) Describe the procedure from first contact with the company all the way to handing over the final screening report to the company:<br>Generally, the procedure is the following:<br>1. Making the first contact: This step is about finding the right person in a company and explain the idea of Industrial Symbiosis and why it is valuable for them to invest some time in cooperating with us. Also, it is important to create trust and tell about what Tyreman Group and BIS project are about and why all is working as it works. Vast of time was spent on lots of kick-off meetings and communicating with managers of different levels (operation, strategic, etc.).<br>2. Signing invitation letter: When we succeeded in selling the idea of industrial symbiosis, we suggested companies to sign invitation letters to participate in screening within Baltic Industrial Symbiosis project. At this stage, it is necessary to explain participants all the procedures, to answer their questions connected with non-disclosing information, to tell more about other project partners participated in BIS.<br>3. The first dive in screening: after a company signed an invitation letter we started to work on screening of a participant. It is needed to say that studying |

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| of a company began from the first phone calls. During remote interaction, we managed to pre-fill a screening form for a company.<br>4. Meeting: as usual, there is a need in several phone calls and negotiations in order to explain a participant all the details of screening procedure. When colleague understands document, we organize meeting. Tyreman Group tried to visit the facilities of all local partners to become familiar of a production process of screening participant. These meetings helped to fill the screening form fully and understand a company's motivation in participation in BIS project |
| c) Describe if any changes have been made, as compared to the initial procedure communicated via the webinar and the Peer-to-Peer screening demonstration in Kalundborg:<br>Peer to peer in Kalundborg gave lots of insights about screenings. Due to this event we took a new look at Tyreman Group's existing partners from main activity (tire saving technologies). We found that present networks might work to find local partners for BIS project.<br>Also, Peer to peer event provided us an opportunity to create news and share our new knowledge with potential partners in Russia.<br>An experience of colleagues from Linköping University inspired Tyreman Group to attract students in studying of potential symbiosis in Russia. PP12 organized research sessions with learners from Peter the Great St. Petersburg Polytechnic University. |
| d) Describe lessons learned based on descriptions a to c:<br>We could say that industrial symbiosis formation is not an easy task. It is reasonable that Kalundborg has been working on such great initiative more than 50 years. We guess it is still lots of work to do.<br>Tyreman Group gained knowledge and practical skills of industrial symbiosis formation in St. Petersburg. Company tried to work with any opportunity to attract the most suitable companies in screening activities. Tyreman Group was active in participating in relevant events, web-site formation, writing articles in different journals, preparing news for e-mailing, etc. Also, it is crucial to use existing surrounding of people, companies, organization for implementation of planned activities. |

## 2. List of companies screened

| Company name | Large/SME |
|---|---|
| A | Large |
| B | Large |
| C | Large |
| D | SME |
| E | SME |
| F | SME |
| G | SME |
| H | Large |
| I | Large |
| J | SME |
| K | SME |
| L | Large |
| M | SME |
| N | SME |

Fill out below templates with screening information from individual 7-10 companies of which a minimum of 50% must be SME´s.

## 3. Companies contacted

e) How many companies have you been in contact with during the recruiting process?

Number of Large companies: more than 20

Number of SME: more than 50

f) State the main reasons for a company to reject the screening proposal?

The main reasons to reject the screening proposal:

1. Lack of time/people for investigation of possible symbiosis networks
2. Company has already decided its' crucial tasks connected with waste and/or resource efficiency
3. Present company's priorities are not connected with waste and/or resource efficiency

| COMPANY 1: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: A |
| Company address: St. Petersburg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>X Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 02-12-2019 |
| Describe the company, their main business/production and product(s):<br>Providing retail spaces for rent in Grand Canyon Mall |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Water treatment – potential in treatment of used water<br>2: Organization of separate waste collection – potential in creation of high-quality resources from waste (plastic, paper, organic waste) |
| Describe already existing symbiosis, if any:<br>- |
| Comments and lessons learned from this company screening, in particular: |

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|---|
| The company is managing large mall in St. Petersburg (Grand Canyon). Company has lots of renters from different sectors: clothing stores, grocery chains, restaurants and cafes, cinema, fitness and spa centers, ice skating rink, etc.<br>Screening showed that organization is interested in green initiatives and innovation solutions that could increase effectiveness of present business (for instance, cogeneration, trigeneration, etc.). Management of a company became interested in industrial symbiosis. At the same time, the company is facing with lack of employees and significant decrease in revenue because of COVID-19. Nevertheless, the company is open for cooperation and ready to study water treatment and separate waste collection solutions after the decline of a pandemia. |

| COMPANY 2: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: B |
| Company address: Petrozavodsk |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>X Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: _____ |
| Screening date: 18-11-2019 |
| Describe the company, their main business/production and product(s):<br>Production of crushed stone in Karelia, Russia |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*: |

| |
|---|
| 1: Crushed stone (diameter 0-5 mm)– potential in delivering small crushed stone to the partners<br>2: Old tyres (radius 25''-29'') – potential in delivering old and large-sized tires for any production processes |
| Describe already existing symbiosis, if any:<br>Crushed stone (diameter 0-5 mm) is being delivered to wood processing enterprises for road filling |
| Comments and lessons learned from this company screening, in particular:<br>The company is a large mining company that is producing crushed stone in Karelia. It supplies its products to firms from different sectors. The most consumption of this stone is for road construction.<br>The company faces with a necessity to find partner who would use crushed stone of small diameter (0-5 mm) in its production process for producing high-value goods. Also 4 mining centers of a company generate old and used tyres that could also be delivered to the partners. The company is open for studying technologies and cooperation with local and international partners |

| COMPANY 3: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: C |
| Company address: St. Petersburg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: restaurants & café |
| Screening date: 18-02-2020 |

| |
|---|
| Describe the company, their main business/production and product(s):<br>Chain of coffee shops in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Coffee waste – potential in delivering coffee waste to the partners |
| Describe already existing symbiosis, if any:<br>The company is working on different ecological initiatives. For instance, in 2020 it organized an event where staff of a company collected plastic glasses that were recycled properly then. |
| Comments and lessons learned from this company screening, in particular:<br>The company has 57 coffee shops in St. Petersburg and 4 in Moscow. There is own sustainable development department in a company that is working on different ecological initiatives. The company is exciting about finding local partners who could use coffee ground waste in its own production process. The company has worked a lot about this topic by itself. Some potential technologies that were identified by it are: production of coffee cups; growing mushrooms; cosmetics; production of fertilizers. The company tried to find local partners who might use waste from coffee grounds. For different reasons, it has not worked.<br>Tyreman Group is interested to find working solution for this goal. One of the possible is making fuel briquettes by company E that might be useful for production process of shrimps (prawns). Tyreman Group is working on this and other solutions and waiting for the end of COVID-19 pandemia in order to start collection of used coffee grounds from the company's coffee shops. |

| COMPANY 4: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: D |
| Company address: Poroshkino |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (food)<br>□ Energy<br>□ Utilities<br>□ Construction |

| |
|---|
| □ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 27-05-2020 |
| Describe the company, their main business/production and product(s):<br>Canned food production in St. Peterburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Cardboard – potential in delivering to the partners<br>2: Polyethylene – potential in delivering to the partners<br>3: Fluoroplastic – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>Company is working on promotion of principles of waste-free consumption in forests. |
| Comments and lessons learned from this company screening, in particular:<br>Company D is producing canned food of high quality and long shelf time. The main group of customers is consisted of private travelers, hikers, expeditors. A volume of production is relatively small as food waste as well. The company is ready to share package waste (cardboard, polyethylene and fluoroplastic) with local partners. |

| COMPANY 5: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: E |
| Company address: St. Petersburg |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (beer)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication |

| |
|---|
| □ Other: restaurants & cafe |
| Screening date: 13-03-2020 |
| Describe the company, their main business/production and product(s):<br>Beer production in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Brewer's grain – potential in delivering to the partners<br>2: Water with yeast – potential in delivering to the partners<br>3: Plastic kegs – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>Vivid examples of existing symbiosis were not identified during the screening |
| Comments and lessons learned from this company screening, in particular:<br>Company E is producing different types of beer in St. Petersburg. The main company's resources used in production process are from Europe. E's customers are B2B (grocery stores, restaurants, cafés, hotels, etc.) and B2C clients. Company is interested in finding partners who will use brewery wastes as resource. Company G is already testing water with yeast from E in its production process |

| COMPANY 6: |
|---|
| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: F |
| Company address: Vsevolozhsk |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (shrimps/prawns)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 27-12-2019 |

| |
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| Describe the company, their main business/production and product(s):<br>Shrimps/prawns production in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Water with waste from shrimps – potential in delivering to the partners<br>2: Feed for shrimps – potential for local innovators to create and supply company F with special feed for a company |
| Describe already existing symbiosis, if any:<br>Tyreman Group assisted F with production space for start of a business |
| Comments and lessons learned from this company screening, in particular:<br>Company F is producing shrimps/prawns in St. Petersburg. The main groups of customers are grocery shops, restaurants, cafes. The company is interested in finding who will use wastewater in production process. Now it seems that hydroponics is a great solution. Management of F is negotiating now with potential partners. Also, firm is looking for local feed products in order to reduce operation costs. Company G is studying possible recipes. |

| COMPANY 7: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: G |
| Company address: Tosnensky district |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (mixed feed)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 29-04-2020 |
| Describe the company, their main business/production and product(s):<br>Mixed feed production in St. Petersburg |

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| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Packaging – potential in delivering to the partners<br>2: Neighbor plant has lots of organic waste – potential for studying a technologies of biogas plant |
| Describe already existing symbiosis, if any:<br>Company is actively using a waste of different food production plants in its own production processes; management is experienced in resource exchange with other firms. |
| Comments and lessons learned from this company screening, in particular:<br>Company G is producing mixed feed for animals in St. Petersburg. Company is exciting about idea of Industrial Symbiosis. Representatives of G are actively communicating with other local partners within BIS and looking for potential in resource exchange. Colleagues are working with company E (using water with yeast) and F (feed for shrimps) now. G could share package waste with other companies. Also, colleagues are interested in biogas technology as their neighbor company has lots of organic waste. It is planned to visit Evobios facilities in Leningrad oblast'. |

| COMPANY 8: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: H |
| Company address: St. Petersburg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (bakery)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 21-05-2020 |
| Describe the company, their main business/production and product(s): |

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| Bakery in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Package waste – potential in delivering to the partners<br>2: Food waste– potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>Company H in St. Petersburg has been already decided goals connected with package and food waste recycle. |
| Comments and lessons learned from this company screening, in particular:<br>H in an international company that is producing bakery for B2C markets. The company has several production facilities in St. Petersburg. Right now, food and package waste is being recycled by the present partners of H (food as a feed for animals, package by the special companies). At the same time, colleagues expressed their interest in BIS project as they are ready to look at and study some more sustainable methods of using these types of resources. |

| COMPANY 9: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: I |
| Company address: St. Petersburg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (dairy products)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 27-05-2020 |
| Describe the company, their main business/production and product(s):<br>Dairy products production in St. Petersburg |

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| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Dairy products – potential in delivering to the partners<br>2: Sludge – potential in development of green energy<br>3: Packaging – potential in delivering to the partners<br>4: Milk whey – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>H realizes several initiatives in delivering its waste to other companies as a resource. |
| Comments and lessons learned from this company screening, in particular:<br>H is large multinational company that produces dairy products. The company has two production facilities in St. Petersburg. Today, H is implementing different ecological initiatives in Russia, for instance company is working with local partners who reuse packaging. Reusing of sludge is one of the priorities of a company. The company is open for any initiatives that help to use resources in the most possible sustainable way. |

| COMPANY 10: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: I |
| Company address: Tosnensky district |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (soil)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 26-05-2020 |
| Describe the company, their main business/production and product(s):<br>Soil production in St. Petersburg |

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| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Soil production waste – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>- |
| Comments and lessons learned from this company screening, in particular:<br>The company is producing soil in St. Petersburg. It has an opportunity to deliver soil production waste to companies that might be interested in such resource. |

| COMPANY 11: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: J |
| Company address: Tosnensky district |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (meet processing plant)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 13-05-2020 |
| Describe the company, their main business/production and product(s):<br>Meet processing plant in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Blood – potential in delivering to the partners<br>2: Hair – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>The company is actively supplying different local companies with by-products: bones, viscera, head, etc. |

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| Comments and lessons learned from this company screening, in particular:<br>Company J is producing meet in St. Petersburg. The company is actively delivering different by-products of its production process. J faces with a necessity to find companies that could use blood and hair as resources. |

| COMPANY 12: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: K |
| Company address: St. Petersburg |
| Large/SME: Large |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (biomedical company)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: restaurants & cafe |
| Screening date: 25-06-2020 |
| Describe the company, their main business/production and product(s):<br>Production of medicine in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Plastic, paper, cardboard – potential in delivering to the partners<br>2: Used chemical reagents – potential in delivering to the partners<br>3: Used individual protection means – potential in delivering to the partners<br>4: Acetone-based solvents – potential in delivering to the partners |
| Describe already existing symbiosis, if any:<br>The company is now supplying organizations a part of plastic, cardboard and paper wastes for recycling. |
| Comments and lessons learned from this company screening, in particular: |

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| The company is a large biomedical company with a headquarter office in St. Petersburg. It is producing drugs for cure of cancer. K is working on medicine for COVID-19. Managers of a company are interested in BIS project. Colleagues are ready to share partners with several groups of waste (plastic, paper, cardboard, chemical reagents, acetone-based solvents). K studied a possibility to use blood waste of meat processing plant, but there is a strict requirement of clean process for blood collection. |

| COMPANY 13: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: L |
| Company address: St. Petersburg |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>□ Production<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>X Other: engineering company |
| Screening date: 27-06-2020 |
| Describe the company, their main business/production and product(s):<br>Ecological production of heat and electricity from waste |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: Biowaste – potential is using biowaste as a resource for heat and electricity |
| Describe already existing symbiosis, if any:<br>L is constructing a pyrolysis plant for the utilization of sludge for a large Russian petrochemical company. |

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| Comments and lessons learned from this company screening, in particular:<br>Company L is a St. Petersburg SME, that is specialized in technologies of ecologically friendly processes of electricity and heat production from waste, i.e. pyrolysis technology. The company is ready for cooperation with organizations that have problem connected with biowaste. L would be glad to work with Paper Province to contribute its knowledge and experience to sludge problem solving. It is also planned to organize Match&Meet events with Tyreman Group's local partners for studying a symbiosis potential |

| COMPANY 14: |
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| Project Partner: Tyreman Group |
| PP-number: 12 |
| Company name: M |
| Company address: Tosnensky district |
| Large/SME: SME |
| Branch (*select from list or indicate specifically under "Other"*):<br>□ Agriculture, forestry and fisheries<br>□ Mining and resources<br>X Production (ecological benches)<br>□ Energy<br>□ Utilities<br>□ Construction<br>□ Transport and handling of goods<br>□ Trade<br>□ Medical<br>□ Information and communication<br>□ Other: engineering company |
| Screening date: 30-06-2020 |
| Describe the company, their main business/production and product(s):<br>Production of ecological benches in St. Petersburg |
| List and describe the largest symbiosis potentials in prioritized order *(start with one of 3 categories: Water, Energy, Materials)*:<br>1: High-density polyethylene (HDPE) – potential to use this waste as a resource<br>2: Low-density polyethylene (LDPE) – potential to use this waste as a resource<br>3: Polypropylene (PP) – potential to use this waste as a resource |
| Describe already existing symbiosis, if any:<br>The company is using High-density polyethylene (HDPE), Low-density polyethylene (LDPE) and Polypropylene (PP) in its production process |

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| Comments and lessons learned from this company screening, in particular:<br>This young startup is producing ecological benches by using plastic wastes (HDPE, LDPE, PP) and sand. Leader of M became interested in Baltic industrial symbiosis project. It was revealed that Living Lab might be useful for the development of young company. Other local participants of screening within BIS are ready to meet with colleagues as there is a potential of plastic wastes exchange and PR campaigns. |