

CARBON FOOTPRINT CALCULATOR COMMUNITY

Jannika Hyövähti, Leena Tasala,
Vilma Kangasmaa, Essi Perttunen

20E99904 - Capstone: Business Development Project

18.05.2020

EXECUTIVE SUMMARY

Our client ORSI is a project that aims at developing practices that help Finland to transform into an eco-welfare state. Carbon footprint calculators are a part of this transformation as they are a tool for individual consumers to consider their personal carbon footprint and make more environmentally friendly choices.

The problem is that the calculators give very different results even within the same industries. Consumers have grown weary of the calculators and are even losing trust in them. Therefore, the calculator providers need to find a way to unify their message to the consumers by explaining why the calculators give such different results in addition to actually providing more comparable results.

Therefore, our exciting task was to design a community for carbon footprint calculator providers in order to tackle the challenges in the field. Our research questions were to define (1) targets and (2) requirements for the community. In addition, we wanted to find ways to measure the impact of the community. In order to achieve this, we reviewed literature, benchmarked and conducted interviews with eight professionals in the field. We analysed the data thematically.

Our findings indicate that a community is indeed needed for the field to achieve the improvements of a unified message and more comparable results from the carbon footprint calculators. To achieve these, the community's main targets are to (1) share knowledge and discuss (2) build better standards. The requirements for the community include having both face-to-face and virtual activities, a professional facilitator and an easily accessible platform for the online community.

We recommend that ORSI establishes two groups: a large open group that anyone interested in the topic can join, and a small impact group that the facilitator will form in order to drive new regulations and other guidelines for the field.

Our action plan for ORSI is the following:

1. Choose the facilitator
2. Raise awareness of the community
3. Organize a kick-off meeting, followed by online discussion

CONTENTS

INTRODUCTION	4-5
BENCHMARK AND LITERATURE REVIEW	6-8
BENCHMARK	6
LOCAL ECOSYSTEMS	6
INTERNATIONAL ECOSYSTEMS	6
LITERATURE REVIEW	7
RELEVANT CONCEPTS	7
ECOSYSTEM DEVELOPMENT	7-8
METHODOLOGY	9-12
RESEARCH QUESTIONS	9
METHODOLOGICAL CHOICES	10
DATA COLLECTION	11
INTERVIEW QUESTIONS	11
DATA ANALYSIS	12
INTERVIEW FINDINGS & ANALYSIS	13-15
RQ1: WHAT WOULD BE THE COMMUNITY'S TARGETS?	13-14
RQ2: WHAT WOULD BE THE NEEDS AND REQUIREMENTS FOR THIS COMMUNITY?	15
RECOMMENDATIONS AND ACTION PLAN	16-18
CONCLUSION	19



INTRODUCTION

OUR TEAM



JANNIKA HYÖVÄLTI
jannika.hyovalti@gmail.com



VILMA KANGASMAA
vilma.kangasmaa@aalto.fi



ESSI PERTTUNEN
essi.perttunen@aalto.fi



LEENA TASALA
niemileena@outlook.com

According to the Prime Minister Sanna Marin's government, Finland aims to be carbon-neutral by 2035¹, and the world's first fossil-free welfare society. Our client ORSI (Orchestrating for System Impact) is an R&D project that was set up to support this goal by developing steering practices that help in the transformation towards an ecologically efficient eco-welfare state. One of the main four themes of the ORSI project is "orchestrating sustainable consumption" which focuses on carbon footprint calculators and other tools that help individual consumers become more aware of their carbon footprint and consumption habits. Our research was conducted for this part of the Orsi project. Indeed, we improve the possibilities for individual consumers to get up to date, coherent information about their consumption habits by bringing different actors in the field more closely together.

The challenge we tackle in this report is the following: Companies producing carbon footprint calculators are facing a shared problem. Indeed, at the moment, the carbon footprint calculators give very different results to consumers and thus, their stakeholders are losing trust in the calculators. This is partly because there are no tight standards in the field, so the companies make important decisions about the calculators' technical design by themselves, which often leads to uncomparable results. The providers know about these problems, but are scattered and do not have joint decision-making. To make matters worse, these companies do not have the right channels to communicate and make these decisions together, even though they want to solve the problems and unify the message for the consumers.

Our task is to create a community for Finnish carbon footprint calculator providers to enable effective discussion and problem solving between them. Thus, we set out on a journey to study how a community could help the calculator producers and other immediate stakeholders to solve the problems the field is facing.

Our report will consist of the following. First, we benchmark and review literature as well as identify key take-aways. Second, we present our research questions based on these take-aways and apply a suitable methodology. Third, we analyse the data from 8 interviews with the most relevant professionals in the field and identify main findings. Fifth, we give our recommendations and present our action plan, which are based on the findings from a literature review, benchmark and the data analysis. Finally, we will close with conclusions.

1 Finland: Finnish Government (2019) Programme of Prime Minister Sanna Marin's Government 2019. Helsinki, Finland: Finnish Government.



BENCHMARKING AND LITERATURE REVIEW

This chapter is organised as follows. First, we present our exciting findings from the Finnish and international benchmarks and their key learnings. Then, we move on to the relevant concepts found in the literature and their main take-aways.

BENCHMARKING

We started our journey by benchmarking the field. We found some interesting local and international ecosystems, which showed us that it is indeed possible and beneficial to build a cross-sectoral community. Next, we will present the main examples followed by key findings.

Local ecosystems

Example 1: The Finnish healthcare sector involves multiple efficient ecosystems, such as the vibrant ecosystem in the Helsinki Metropolitan Area which involves collaboration between health-tech companies, public actors and universities. The aim of the ecosystem is to promote synergies and cooperation between different actors in relation to the health sector: research, technology transfer, the emergence of growth businesses and social impact.

Example 2: The local innovation ecosystem Hiedanranta is a new, large district where transnational stakeholders cooperate jointly with the city of Tampere, businesses, educational institutions, research, development and support organizations, citizens and other regional actors in order to promote smart technology, sustainability and circular economy solutions. The active role of the city of Tampere in developing Hiedanranta as an innovation ecosystem has enabled key stakeholders to meet, find common interests and cooperate to promote a sustainable circular economy.

Finding: The main finding from these ecosystems is that it is essential to involve multiple stakeholders already in the planning phase of the activities and targets. For example, city residents, companies, and other stakeholder groups were involved in the preparation of the targets and activities for the successful Hiedanranta ecosystem.

International ecosystems

Example 3: EU-level innovation ecosystem iSCAPE was an EU-level research and innovation project active from September 2016 to December 2019. This project integrated and advanced the control of air quality and carbon emissions in European cities with an ecosystem approach. It tackled the problems of carbon emissions with policy intervention and behavioural changes in 'living labs'; user-centered ecosystems, where the public and private sector and researchers collaborated. These living labs operated in six European cities to foster innovation and create shared standards, such as air quality monitoring kits.

Finding: The main finding from this ecosystem was that it is indeed beneficial to build a community for cross-sectoral sustainability challenges and it can bring tangible results. More information on the outcomes can be further investigated from reports by iSCAPE.

LITERATURE REVIEW

After benchmarking, we conducted the literature review in order to see what scholars say about our research context. Our research aimed at understanding how to increase collaboration between multiple stakeholder groups as well as at how to form a framework for change in practices and standards. Therefore, our literature review consisted of studies from innovation ecosystems, cross-sectoral collaboration and transition management. We will also present the most important findings about the development phase of ecosystems. As the community we design will be an innovative multi-sectoral collaboration, we think that the literature on ecosystems is very relevant and can be applied to the community as well.

Innovation ecosystems are tight, dynamic, and self-directed networks, where openness, interaction, and interdependence are stronger than in traditional clusters, and which are needed to establish innovative solutions to societal problems that individual actors cannot solve².

Cross-sector collaboration involves collaboration between organisations from business, government and civil society on the basis of converging interests, focused on achieving common, socially beneficial objectives³.

Transition management is a governance approach that aims to facilitate and accelerate sustainability transitions through a participatory process of visioning, learning and experimenting, by bringing together multiple stakeholder viewpoints in a 'transition arena'. Participants are invited to share their problems and develop future visions and goals which are then tested for practicality through experimentation, learning and reflexivity⁴.

RELEVANT CONCEPTS

Ecosystem development

We also found three important points related to the development phase of an ecosystem.

First, in the development phase of ecosystems, the end-users should be involved to reap the best benefits from the ecosystem, which was seen also in the example of Hiedanranta⁵. Therefore, Bryson et al.³ emphasize that shared agreement on the main problems and targets is crucial in effective cross-sectoral collaboration. Furthermore, getting a broad understanding of the needs of different stakeholders is a prerequisite for building an innovation ecosystem⁶. These findings helped us form our research questions, which will be elaborated in the next chapter.

2 Finland: Prime Minister's Office (2017) Innovation ecosystems as drivers of research–industry cooperation. Helsinki, Finland: Prime Minister's Office.

3 Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of Cross Sector collaborations: Propositions from the literature. *Public administration review*, 66, 44-55.

4 Loorbach, D. (2007). *Transition Management: New mode of governance for sustainable development*. Utrecht, Netherlands: International Books.

5 Joensuu, T., Norvasuo, M., & Edelman, H. (2020). Stakeholders' Interests in Developing an Energy Ecosystem for the Superblock—Case Hiedanranta. *Sustainability*, 12(1), 327.

6 Ritala, P., Agouridas, V., Assimakopoulos, D., & Gies, O. (2013). Value creation and capture mechanisms in innovation ecosystems: a comparative case study. *International Journal of Technology Management*, 63(3/4), 244-267.

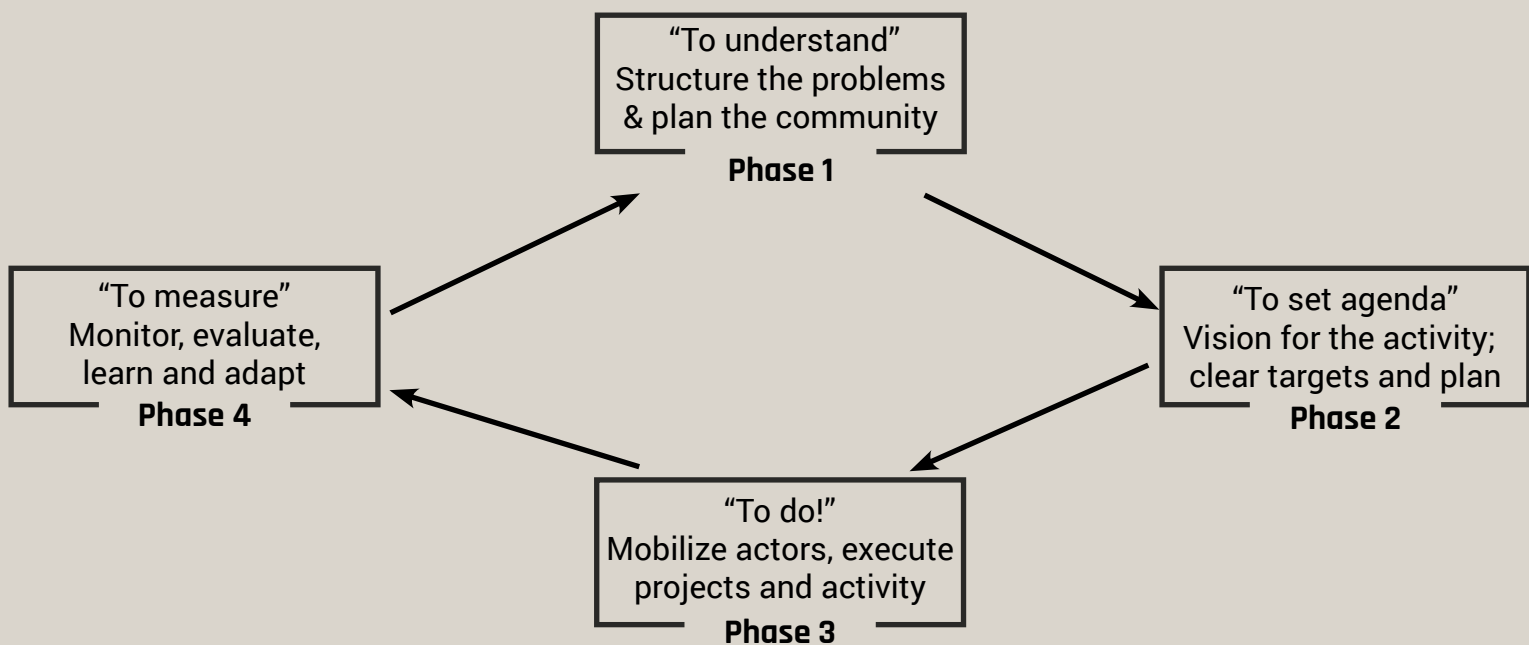
Second, facilitators have an essential role in building effective innovation ecosystems². Facilitator’s role is to plan the activities based on a community’s needs, forge initial agreements, as well as focus on leading the common culture by building legitimacy, trust, and managing conflicts³. As innovation ecosystems often involve physical and virtual activities, facilitators also need to maintain interaction in both. Therefore, the ecosystem requires long-term commitment of the facilitator².

Furthermore, it is necessary to emphasize that especially during early stages of community, the ‘champions’ (people who focus intently on keeping the community going) together with facilitator form collaborative leadership for the community and play a crucial role in identifying the potential of the community⁷. Therefore, it is important to keep the discussion alive with the actors already involved with Orsi.

Third and last, we will present a useful process cycle from the field of transition management⁸. This cycle has been beneficially exploited as a method for change by multiple governmental organizations and sustainability research projects, especially in Holland. The core idea is that development of societal transitions should follow a cycle of four kinds of governance activities. This cycle also helped us plan our project and form research questions:

Strategic: Problem structuring and establishment of the transition arena (starting point in our project)

- (1) Tactical: Developing agenda and targets for the activity (RQ1 in our project)
- (2) Operational: Mobilizing actors and executing projects and types of activity (RQ2 and Action plan in our project)
- (3) Reflexive: Evaluation, monitoring and learning (subquestion in our project)⁸.



7 Huxham, C., & Vangen, S. (2013). *Managing to collaborate: The theory and practice of collaborative advantage*. Routledge.

8 Loorbach, D. (2010). Transition management for sustainable development: a prescriptive, complexity based governance framework. *Governance*, 23(1), 161-183.



METHODOLOGY

In this chapter we elaborate on our methodological choices and their context concerning our project. The chapter is structured as follows. First, we present our research questions. Then, we discuss and justify our methodological choices. Finally, we close with our data collection and analysis plan.

RESEARCH QUESTIONS

Based on our literature review and benchmark, we were able to form our research questions. As emphasized by Bryson et al. (2006) and Loorback (2010), defining problems and targets is crucial for an effective cross-sectoral collaboration. Furthermore, getting a broad understanding of the needs of different stakeholders is a prerequisite for building an innovation ecosystem (Ritala et al., 2013). Therefore, we formed our research questions as:

- 1. What would be the targets for the community?**
- 2. What would be the requirements of the community?**

RESEARCH QUESTIONS

In addition, we were asked to think of ways to measure the impact of the community. Considering the tight schedule we faced, we could not do a thorough analysis on the measurement of impact but will nevertheless present some Key Performance Indicators (KPIs) at the end of the report.

METHODOLOGICAL CHOICES

We have chosen to conduct a qualitative study in order to answer our research question in a well fitted manner. We plan to conduct purely a qualitative study without quantitative methods. That is, as our goal is to emphasize thick description, understanding and interpretation, it is not necessary to include any quantitative methods⁹. Indeed, as we want to look at different stakeholders and understand their challenges, needs and motivation for the community, qualitative study suits our purposes nicely.

Furthermore, a qualitative study can be focused on a specific phenomenon in a real-life business context. Therefore, it gives us an opportunity to make better sense of this certain context, explore the complexity and understand how it changes⁹. Furthermore, as the study we will conduct is very specific to its context and no setting is identical, choosing a qualitative method was a clear choice for us. Furthermore, it helps us to avoid too simplistic and reduced methodology⁹.

All these aspects are vital to really understand on what basis a community can be created and how. We will keep in mind, however, as Kovalainen & Eriksson⁹ further argue, that it is important to stay in the dialogue with the empirical data and be able to reformulate our research questions during the process. We consider this as a good opportunity to benefit from the data in the best way possible.

Furthermore, as our ontological perspective is relativist and we assume that reality is subjective, qualitative study methods provide us with well fitted approaches. Moreover, as we build on social construction as an epistemology, this further points us to the direction of qualitative methods⁹. Indeed, these methods allow us to go deeper than numbers and look at variables of the social and cultural construction⁹.

Within qualitative research methods, we have chosen to conduct a case study, which is considered as one of the most impactful research methodologies in management studies¹⁰. In general, case study research helps to accumulate improved understanding of everyday business practices and their social contexts¹¹, which offers a good base for examining the motivations, targets and requirements for building a community. As our epistemological perspective is social construction, it is obvious that we approach the topic from a social context and therefore a case study is an informed choice.

9 Eriksson, P. & Kovalainen, A. (2008). *Qualitative methods in business research*. London; Sage.

10 Gibbert, M. & Ruigrok, W. (2010). The “what” and “how” of case study rigor: three strategies based on published work. *Organizational Research Methods*, 13 (4), 710-737.

11 Scapens, R. & Humphrey, C. (1996). Theories and case studies of organisational accounting practices: limitation or liberation? *Accounting, Accountability and Auditing Journal*, (D), 4, 86-106.



DATA COLLECTION

Out of the six sources of evidence for a case study¹², we have chosen interviews as the main data source for our study. Interviews are very beneficial in that they can be focused on a particular setting and in addition, provide insight, causal inferences and descriptions¹². Interviews are in fact one of the most important sources in case study research overall¹². Indeed, as we seek to produce empirical material from a particular setting for the study, interviews are an informed and well-fitting choice.

Furthermore, we have chosen a semi-structured form, because it enables us to collect data in a systematic way⁹ and simultaneously allows to keep a conversational manner, which leaves room for elaborative questions and even probing, if needed¹². Thus, the important point in the constructionist approach is to acknowledge that the discussion can flow into many directions⁹.

However, interviews also have weaknesses. Indeed, Yin¹² notes that there might be bias due to badly articulated questions, response bias, “inaccuracies due to poor recall” and “reflexivity, as an interviewee gives the interviewer what interviewer wants to hear.” In our context, this means that interviewees might give more positive comments towards building a community than what they really think. In order to avoid this, we can, for example, be cautious, and sensibly probe, if needed¹². We must also study the questions beforehand to be well prepared and to avoid leading questions.

Thus, overall, these methods suit our study objective very well. We do acknowledge that case studies cannot be generalised to populations, only to theoretical models¹³. Although some could see this as a limitation, we do not look at it that way. Indeed, a case study helps us to understand the case from the inside and understand the people involved⁹, which to us is a better lesson than a generalisation. We also think that motivation and knowledge can be drawn as examples from the case and be provided to other organizations and communities, even though the exact same solutions would not work.

INTERVIEW QUESTIONS

Our interview questions were categorized into three groups. First, we detected what were the roles of the interviewees in this field and how they knew Orsi. Second, we detected their main challenges in order to understand what kind of community would be needed in order to solve the problems each interview segment faced. Finally, we asked what kind of form the community should take and what the community should do. The interview questions in full can be found at the end of this report.

12 Yin, R. (2009). *Case Study Research*. Los Angeles, California, US: Sage.

13 Yin, R. (2003). *Case Study Research Design and Methods*, 3rd edition. Thousand Oaks, CA, US: Sage.

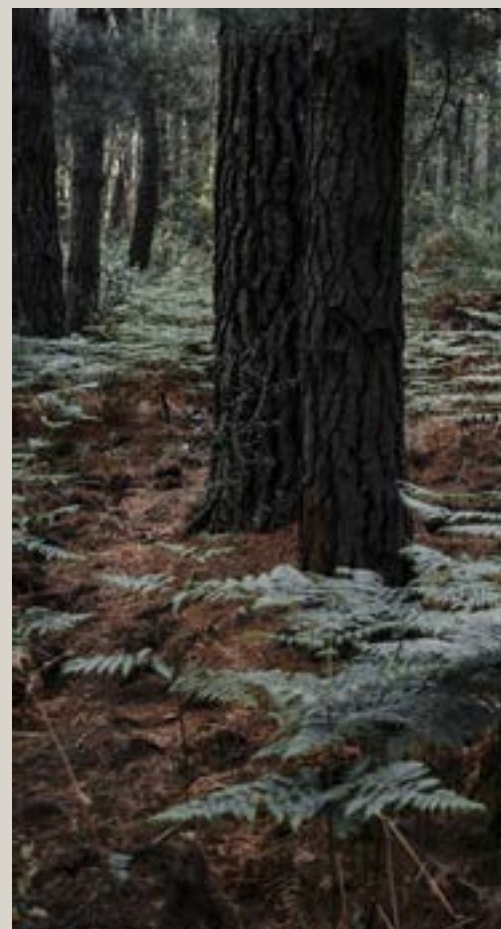
DATA ANALYSIS

Data analysis of our study will be a thematic analysis. Braun and Clarke¹⁴, define thematic analysis as “identifying, analysing, and reporting patterns (themes) within data”. Furthermore, they have defined six clear and usable steps into thematic analysis:

1. Gathering the data
2. Identifying preliminary codes
3. Identifying themes from the codes
4. Reviewing the themes
5. Defining & naming the themes
6. Writing a report based on the findings¹⁴

Therefore, we started by collecting the data. Then, we defined an initial set of codes¹². After this phase, we needed to apply a lot of individual thinking and analysis¹² in order to raise the most relevant themes emerging from the codes in order to create good targets and requirements for the community. After defining and naming the themes, the writing could finally take place.

14 Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101.



INTERVIEW FINDINGS AND ANALYSIS

We conducted eight interviews during the time 1.4.-28.4.2020. The interviewees were contacted through ORSI's connection list. Our focus was to get interviews from different stakeholders in the field of carbon footprint calculators.

We divided the interviewees into four categories:

1. academic researchers,
2. small and medium-sized enterprises,
3. public sector,
4. large enterprises.

The first category includes three interviewees, and all of them have connections to ORSI. Their research interests are related to carbon footprint calculators. Second category, small-medium-sized enterprises, includes two interviewees who work with footprint calculators. They both have a firm which is tightly connected to the calculators' creation. Their customers are small-medium sized. Third category includes two interviewees from the public sector. Finally, the fourth category includes one larger enterprise, who does not build calculators, but whose business is tightly related to people's consumption habits and that way has interest in carbon footprint calculators.

After the interviews, we approached and analysed the interview data thematically, as explained in the data analysing section. Next, we will answer both research questions. Thus, this section is divided into two, targets and requirements for the community. The sub question will be answered later along with the recommendations.

RQ1: What would be the community's targets?

In order to design a community that will be able tackle the issues in the field, we based the targets on the problems and concerns our interviews had regarding the community and the development of the calculators. Fortunately, we were able to define targets in a way that would help solve these different concerns as well as the main problem.

As was mentioned in the introduction, the main problem in the field was that consumers do not trust the carbon footprint calculators, because calculators even within the same industry give such different results. As ORSI initially suspected, all interviewees recognised this as the biggest issue.

However, based on the interviews, we found that some of the different results are natural as calculators even within the same industry might have different aims: some calculators aim to calculate more specific data, whereas some aim to give a bigger picture of yearly carbon footprint.

Interviewee, category 3: *"Main problem is that users do not know what is behind the calculators"*

Hence, this could be fixed by simply explaining to consumers that the calculators have different aims and that is why they give such different results. Therefore, the findings indicate that some of the challenges of trust among consumers could be solved by enhanced communication. For example, by agreeing among the producers that they will inform about these different aims on their websites and explain how that is the reason for the variety in results.

In addition, many interviewees also wanted to discuss, share knowledge and some even to educate other companies on building the calculators, in order to have more comparable results. These citations demonstrate this:

Interviewee, category 2: "Discussion is the most important thing."

Interviewee, category 3: "Currently, there is no cooperation between different footprint companies so it (community) could be a good idea."

Therefore, a lot of the problems in the field could be fixed by simply sharing knowledge and discussing the best practices together. The key topics they wanted to discuss were general problems of the field, practical issues with the calculators and data openness. Fortunately, all interviews hoped for more discussion in order to unify the message for consumers, so there already exists good motivation. Thus, the first target for the community is simply:

(1) Share knowledge and discuss.

However, we could not miss the finding that there are actual problems with standards in the field. Right now, the existing standards are loose and companies end up making important decisions about the calculators' technical design by themselves. For example, producers can use different data sources and factors in their calculators, which, again, leads to uncomparable results. The next citation demonstrated this:

Interviewee, category 4: "It cannot be possible that all actors have to decide themselves what to include to calculators and what not."

However, this is not easy to solve, because, for example, large data banks are so expensive that SMEs simply cannot afford them. Furthermore, some producers are afraid that in order to develop the calculators they might have to open a lot of data, which others might take advantage of.

Thus, we detected that these are the sort of challenges that can only be improved by building better standards and norms for all calculator providers. For example, a shared data bank was suggested by many, but hard to actualize as it requires a significant amount of money and time and therefore needs higher level support. Fortunately, some of the interviews were eager to share data and develop the practices together, so there is motivation for driving the standards in a smaller group. Hence, the second target for the community is:

(2) Build better standards.

Together, these targets lead to more comparable calculator results and thus, a more unified message to the consumers.

RQ2: What would be the needs and requirements for this community?

To start with, all interview categories recognised the issues in the field and hoped for more discussion in order to tackle these issues. In addition to discussion, three main requirements for the community were pointed out from the interviews:

First, the interviewees wanted both face-to-face and virtual seminars and workshops, because they thought that conversation only online would fade away easily. Also, the importance of a face-to-face kick-off event was emphasized. The following citation indicates this:

Interviewee, category 1: *“Physical contact might be necessary, there are already places where people can meet online (for example LinkedIn)”*

Second, interviewees favored easy accessibility to the community. Hence, physical events and workshops should be arranged in easily accessible locations, and the online discussion and activity should happen in already familiar platforms, such as LinkedIn.

Third, a very important finding was that this community needs a facilitator. This opinion came out loud and clear. It is important to note that this also came up in a literature review and benchmarks. Indeed, the general opinion was that if there are no facilitators, the community will not survive after the first phase. These citations demonstrate the role of a facilitator.

Interviewee, category 1: *“Communities might “die” if there is no one responsible for facilitating the conversation.”*

Interviewee, category 3: *“A community just to enable discussion is not enough: needs facilitators.”*

Indeed, according to the interviewees, people will concentrate better and they have more time for the community if there is someone who guides the conversation and arranges the happenings. Also, some interviewees highlighted that as this field is so complex, it is good to have a facilitator who will search for information regarding regulations, such as consumer protection laws, as well as detect the authorities who set the frameworks for action.

Finally, an interesting finding was made about whether the community should be open or closed. Some interviewees felt that the community should be open for everyone, even for the people who are not familiar with the footprint calculators, but are interested in the topic. On the other hand, some of the interviewees felt that this field needs better standards and therefore a smaller, more focused group. We think that for this purpose, a closed community would be more suitable, as it enables trust and provides a secure place to share knowledge and data. Trust is essential, as one way to improve the calculators is by sharing own data.

Interviewee, category 3: *“Place for creating ‘playing rules.’”*

Interviewee, category 2: *“Could this community be more like a working group?”*

To summarise, it is clear that this field needs more conversation in order to share knowledge, agree on shared practices and build better standards. Furthermore, the community also needs a facilitator.

RECOMMENDATIONS AND ACTION PLAN

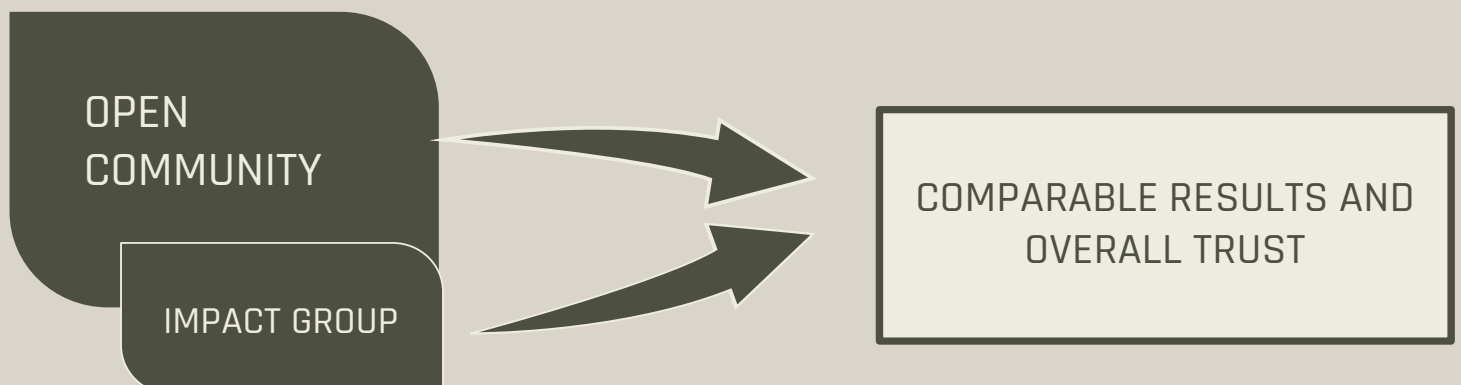
RECOMMENDATION: ESTABLISH TWO GROUPS

Following from the above, our research indicated that there is a need for two groups; a large community that would be open to anyone that would be interested in joining and a smaller group within the large community, which will operate more intensively and develop new norms and standards in the field. We will call these groups the Open community and the Impact group.

As was mentioned, the Open community will be a large community that anyone can join to discuss and share knowledge. We saw this kind of a group necessary since our research indicated a strong desire of all kinds of actors in the field to have more discussion together and agree on the shared practices in order to unify the message to the consumers and produce more comparable results.

Furthermore, we could also indicate a clear need for more regulation in the field. Thus, we came to the conclusion that having a second, smaller and closed group would help driving the standards. The Impact group will bring together the most experienced actors in the field, who can meet more intensively and share resources in order to design new regulations and standards for the field.

Even though these groups would have slightly different tasks, they work within the same community and towards the same goal: to build better calculators with more comparable results and improve the overall trust towards the field.



CHARACTERISTICS OF THE COMMUNITY

As was discussed in the literature review and the interview findings, it is clear that the community would need a motivated facilitator to coordinate the community and its two groups. Thus, the facilitator would have to be familiar with the industry and its actors as well the different needs of each segment of the community (e.g. SMEs versus large enterprises). The facilitator can also boost the motivation of the members by clearly explaining the targets as well as practical guidelines.

Furthermore, the facilitator will organise the community events and moderate the online discussions. For example, as some of the interviewees were eager to share their knowledge and educate other companies on building the calculators, so the facilitator could organise these presentations. We think it would be the most convenient if someone from ORSI took the role of a facilitator, at least in the beginning. We would also recommend considering the possibility of organizing the events in collaboration with one or two relevant actors in the field.

Furthermore, we found in the interviews that both face-to face and online events are needed. The community would start with a kick-off event that would mark a clear start for the community. The kick-off meeting would also be a good chance to get to know each other and discuss what the community members expect, what kind of activity they would prefer and how much time they are willing to allocate to the community. Involving the members of the community in planning the activities is useful in terms of effectiveness and engagement as we learned from the Hiedanranta case⁵. Furthermore, the targets of the community should also be clearly stated at this event as was found in our research.

After the kick-off event, the conversation would move online. We think that it would be important to make one platform as the main channel of communication. Here, the important finding was that the community should be easily accessible. Therefore, we would suggest LinkedIn as the main channel for communication and networking. The pros of using LinkedIn include it being already regularly used for networking; most people already have a profile including information about their jobs and many also regularly visit the platform. Therefore, there is a high probability that the members receive notifications of upcoming events and other new posts from the community. LinkedIn would also provide the advantages of not having to spend money or time on building a whole new platform.

For webinars and other oral presentations we recommend Microsoft Teams or Zoom. The benefits of Microsoft Teams and Zoom are similar; most people are already familiar with these platforms and these are easy to use. For general data or presentation sharing, we recommend Google Drive.

The Impact group will probably be relatively small, so we think it is better that the members agree on the most convenient platform themselves. However, we want to stress that for any delicate data sharing, a trusted server is a must.

We would recommend organizing face-to-face events for the Open community at least a couple of times a year. These would include educational presentations, discussion and networking. Webinars and other online events can happen as often as the community wishes.

ACTION PLAN



Step 1. Choose a facilitator to coordinate the community. We have elaborated on this step's importance in literature review, findings and the previous chapter.

Step 2. Raise awareness. The facilitator will raise awareness of the community by communicating with relevant actors. Contacting the actors that have previously been involved with ORSI would be a good starting point. The facilitator can also encourage these actors to spread the word to anyone that might be interested. In addition to the word of mouth, LinkedIn and email are good options for reaching out to potential members.

Step 3. Organise the kick-off meeting. Depending on the restrictions set by authorities, a good time for the kick-off meeting might be this fall or next spring. At the event, the facilitator will introduce themselves, present the targets and outline who could be a member of the impact group.

After the kick-off, the conversation will continue online. Webinars and next face-to face events will be organised by the facilitator depending on the community's preferences.

CONCLUSION

Our task was to create a community for carbon footprint calculator providers and their immediate stakeholders to tackle the shared problems in the field. In order to do this, we conducted a literature review, benchmark, and 8 interviews with relevant professionals. We had two research questions; to define targets and requirements for the community.

We found that the community could indeed tackle the challenges the field is facing. We defined that the two main targets for the community would be to (1) discuss and share knowledge and (2) build better standards. Together, these targets will reach the goal of more comparable results and a unified message to the consumers.

To make the community as effective as possible, we recommended establishing two groups within the same community, a larger group, called Open community and a closed small group, called Impact group. Open community would focus on discussion, sharing best practices and knowledge through an easily accessible online platform as well as face-to-face meetings organised by a professional facilitator. Impact group, on the other hand, would drive better standards, also with the help of the facilitator. Though the two groups have slightly different tasks, they still aim for the same main goal; building better calculators with more comparable results and thus unify the message to the consumers.

The impact of the community will need to be reported to the Academy of Finland, that funds the ORSI project through their STEER program. Here are some of the Key Performance Indicators (KPIs) that we could identify:

- How many people are part of the open community
- How much online activity there is
- How many people are part of the impact group
- The attendance rate at events
- Any concrete actions resulting from discussion within the community; new projects, regulations, common agreements, etc.

KEY PERFORMANCE INDICATORS

References, appendices as well as a work division table can be found below.

REFERENCES

- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101.
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of Cross Sector collaborations: Propositions from the literature. *Public administration review*, 66, 44-55.
- Eriksson, P. & Kovalainen, A. (2008). *Qualitative methods in business research*. London; Sage.
- Finland: Finnish Government (2019) Programme of Prime Minister Sanna Marin's Government 2019. Helsinki, Finland: Finnish Government.
- Finland: Prime Minister's Office (2017) Innovation ecosystems as drivers of research–industry cooperation. Helsinki, Finland: Prime Minister's Office.
- Gibbert, M. & Ruigrok, W. (2010). The “what” and “how” of case study rigor: three strategies based on published work. *Organizational Research Methods*, 13 (4), 710-737.
- Huxham, C., & Vangen, S. (2013). *Managing to collaborate: The theory and practice of collaborative advantage*. Routledge.
- Joensuu, T., Norvasuo, M., & Edelman, H. (2020). Stakeholders' Interests in Developing an Energy Ecosystem for the Superblock—Case Hiedanranta. *Sustainability*, 12(1), 327.
- Loorbach, D. (2007). *Transition Management: New mode of governance for sustainable development*. Utrecht, Netherlands: International Books.
- Loorbach, D. (2010). Transition management for sustainable development: a prescriptive, complexity based governance framework. *Governance*, 23(1), 161-183.
- Ritala, P., Agouridas, V., Assimakopoulos, D., & Gies, O. (2013). Value creation and capture mechanisms in innovation ecosystems: a comparative case study. *International Journal of Technology Management*, 63(3/4), 244-267.
- Scapens, R. & Humphrey, C. (1996). Theories and case studies of organisational accounting practices: limitation or liberation? *Accounting, Accountability and Auditing Journal*, (D), 4, 86-106.
- Yin, R. (2003). *Case Study Research Design and Methods*, 3rd edition. Thousand Oaks, CA, US: Sage.
- Yin, R. (2009). *Case Study Research*. Los Angeles, California, US: Sage.

APPENDIX 1. THE ECOSYSTEMS FOUND DURING THE BENCHMARKING AND LINKS TO EXTERNAL INFORMATION

1. Finnish healthcare sector:

https://tietokayttoon.fi/documents/10616/3866814/28_innovaatioekosysteemit-elinkeinoelaman-ja-tutkimuksen-yhteistyon-vahvistajina_kuvamuokattu.pdf/401dd477-d967-44c2-bd57-a74c0f43f095/28_innovaatioekosysteemit-elinkeinoelaman-ja-tutkimuksen-yhteistyon-vahvistajina_kuvamuokattu.pdf?version=1.0

2. Local ecosystem: Hiedanranta

<https://www.tampere.fi/en/housing-and-environment/city-planning/development-programs/hiedanranta.html>

3. International ecosystem: iSCOPE

Outline of the project: https://www.iscapeproject.eu/wp-content/uploads/2017/11/iSCAPE_leaflet.pdf

Results listed to their website: <https://www.iscapeproject.eu/results/>

4. Additional benchmark: International ecosystem Mlab (this can be useful as an example for impact reporting)

https://mlab.co.za/wp-content/uploads/2019/11/mLab-Impact-Report_WEB_102019.pdf



APPENDIX 2. INTERVIEW QUESTIONS

Section 1: Interviewee's background

Short introduction: Who are you, what do you do (and in what way are you familiar with ORSI)?

What kind of carbon footprint calculator related work have you the most previously done or are doing now?

For how long have you been involved in work related to carbon footprint calculators?

With whom do you currently cooperate with carbon footprints and how do you communicate?

Section 2: Calculators and their challenges

What would you consider the biggest challenges regarding Finnish carbon footprint calculators right now?

Is there a specific stakeholder group that this is the hardest for?

How could openness be promoted/advanced? Are there fundamental problems with more (data) openness (like strategic secrets etc)?

(Can some of them only be dealt with legally?) How can we overcome these obstacles?

Section 3: Community-related questions

What do you think about the idea of a community designed for carbon footprint calculator developers and other actors in the field? Do you feel like developing some kind of a community or platform for discussion would be important?

Do you think there would be challenges in establishing or having this kind of a community? Why and what kind of challenges?

What kind of features would you wish the community would have? Related to for example the community as a discussion channel, data sharing, organizing meetings or events.

How many or what kind of actors would you consider to be good to have as part of the community? Would you prefer an open or a closed community?

Do you have previous experience of communities that seek to increase collaboration between different actors? If so, could you tell us more about how it worked? What was positive, or could have been done differently?

What kind of virtual communities or communication channels are you part of or use right now?

What kind of issues would you like to discuss with other actors? What kind of information or data would you like to get from the other actors?

Do you or does the actor you represent have some information or data that you suspect other actors do not have and that you would possibly like to share through the digital community?

ABOUT OUR GROUP WORK

At the beginning of this project we decided that Leena would be our team leader. But as our team was compact and collaboration worked excellently, team leader's job was quite an easy one, although Leena did handle the client meetings and was responsible for giving feedback to the other teams on their presentations. Leena also had a leading role in categorising the findings. Her other responsibilities were conducting many interviews and analysing the data with thematic analysis. Leena was also one of the presenters.

Jannika was the brains behind the structures and flow of our presentation and reports. She was also responsible for the whole methodology chapter. Jannika had the leading role in connecting everything together; formulating and reformulating our RQ's, defining, categorising and articulating the problems raised in the interviews as well creating the community's targets on these bases. Her other main responsibilities were finalizing, editing and partly re-writing our final report. She also had a big role in making the spoken parts and texts for the presentation as well as presenting. Jannika also found relevant benchmarks and handled all communication with interviewees and conducted some interviews.

Vilma had the leading role in conducting the literature review and benchmarks. She also handled the communication with our supervisor. She helped a lot in the data analysing phase, and was one of the presenters. She also conducted interviews.

Essi was responsible for client communication (arranging meetings and other issues). She was the visual mind behind our presentation and the report. She also made sure that during our presentation the slides were moving right. She also participated in the literature review and data analysing. Essi also conducted interviews.

All the team members had major responsibility in writing our report. All in all, the workload was quite evenly divided, and all of our team members' contribution was excellent.