THE SOFT SIDE OF BUILDING ISO 14001 – DEVELOPMENT OF ENVIRONMENTAL EMPLOYEE ENGAGEMENT IN THE CASE OF MUOVILAMI OY

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ABSTRACT

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Abstract
Environmental management systems (EMSs) are important voluntary tools for companies to manage their environmental impacts and improve their environmental performance. However, EMS offer merely a framework for environmental management and, in addition, a genuine engagement of the management and employees with environmental work and its goals is a prerequisite for effective implementation of EMS and real organisational change and greening of the organisation. In recent years, employee engagement has become a popular research topic, as it has been acknowledged to ensure better performance at both employee and company level. However, there is a lack of studies focusing on environmental employee engagement, nor there is available suitable theoretical models or metrics to directly measure the level of environmental employee engagement. The aim of this study was to investigate how employees' environmental attitudes and awareness develop while building an EMS in the case company and how the development of employees' environmental attitudes and awareness indicate development of environmental employee engagement. Employee's engagement was assessed by conducting environmental attitude and awareness survey and interviews before and in the late stages of building the EMS. In addition, to measure engagement, theory-based content analysis was carried out by using key concepts regarding employee engagement applicable to environmental work. Hence, the research is defined as a case study carried out as a longitudinal study, using mixed method research. According to the results, employee's attitudinal engagement has developed to some extent, as there is an indication of the development of employees' perceived importance of environmental work and the level of support towards the company's environmental work. Employees behavioural engagement stayed somewhat the same level, as employee's readiness to put more effort into environmental responsibility was similarly high before and after the EMS. There was seen some development in the cognitional engagement as the willingness to learn and participate into environmental trainings increased in some extent.

Key words
environmental management system, ISO 14001, environmental attitudes, environmental awareness, employee engagement, case study, mixed method research

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Tiivistelmä

Ympäristöjärjestelmät ovat yrityksille tärkeitä vapaaehtoisia työkaluja, jotka tarjoavat järjestelmällisen tavan hallita yritystoiminnan haitallisia ympäristövaikutuksia. Ympäristöjärjestelmät tarjoavat yrityksille kuitenkin vain raamit ympäristöasioiden järjestelmälliseen hallintaan. Tuloksellisen ympäristöjärjestelmän ja todellisten organisaatiomuutosten ja vihertymisen edellytyksenä on kuitenkin johdon ja työntekijöiden aito sitoutuminen ympäristötyöhön ja sen tavoitteisiin. Henkilökunnan sitoutuminen onkin tutkimusaiheena saavuttanut viime vuosina suuren suosion, sillä se on yhdistetty niin työntekijän kuin yrityksen tasolla parempiin suorituksiin. Harva alan kirjallisuudesta kuitenkaan keskittyy juuri työntekijöiden sitoutumiseen ympäristötyötä koskien. Vielä ei ole myöskään tarjolla valmiita teoreettisia malleja tai mittareita ympäristötyötä koskevan sitoutumisen mittaamiseksi suoraan. Usein ympäristötyöhön kohdistuvaa sitoutumista onkin mitattu erilaisilla henkilöstön ympäristöasenne- tai -tietoisuuskyselyillä tai haastatteluilla. Tämän tutkimuksen tavoitteena oli tutkia, miten henkilökunnan ympäristöasenteet ja -tietoisuus kehittyvät ympäristöjärjestelmän rakentamisprosessin aikana tapausyrityksessä ja kuinka asenteiden ja tietoisuuden kehittyminen indikoivat sitoutumisen kehittymistä ympäristötyötä kohtaan. Henkilökunnan sitoutumista tutkittiin ympäristöasenne- ja tietoisuuskyselyn sekä haastatteluotantojen avulla ennen järjestelmää ja järjestelmärakentamisen loppuvaiheessa. Lisäksi työntekijöiden sitoutumisen mittaamiseksi tutkimusaineistoihin tehtiin teoriapohjaista sisältöanalyysiä keskeisten ympäristötyöhön soveltuvien sitoutumista indikoivien käsitteiden kautta. Käsissänne on siten tapaustutkimus, joka toteutettiin pitkittäistutkimuksena ja monimenetelmätutkimuksena. Tulosten mukaan työntekijöiden asenteellinen sitoutuminen ympäristötyötä kohtaan kehittyi jossain määrin järjestelmärakentamisen myötä, sillä ympäristöasioiden ja yrityksen ympäristötyön tärkeäksi kokemisessa sekä muutoksen tukemisessa tapahtui muutoksia. Työntekijöiden käytöksellinen sitoutuminen pysyi melko samalla tasolla, sillä työntekijöiden halukkuus antaa lisää panosta ympäristötyöhön oli yhtä korkealla ennen ja jälkeen järjestelmärakentamisen. Kognitionaalisessa sitoutumisessa oli jonkin verran kehitystä, sillä järjestelmärakentaminen lisäsi jonkin verran työntekijöiden kiinnostuneisuutta ympäristöasioihin ja kouluttautumiseen.

Asiasanat

ympäristöjärjestelmä, ISO 14001, ympäristöasenteet, ympäristötietoisuus, henkilökunnan sitoutuminen, tapaustutkimus, monimenetelmätutkimus

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PREFACE

This Master's thesis was written during extraordinary times. Firstly, for some reason, I have always united the years of studying and having a small baby - and studying at the JSBE was no exception. This gave its own challenging spices to the process. Not to make life too simple, my Master's thesis ended up being a case study carried out as a longitudinal study, using mixed method research. Hence, I jumped straight to the deep end whilst making these research choices. Also, the global pandemic of Covid-19 struck in the middle of my university years. In addition, I returned to working life before graduating, which also slowed down the process of finalizing this research. The journey has been rather long, but I think I have learned my lessons and, somewhere along the way, also had some fun. Warm thanks to the management of Muovilami, who trusted me with the dream task of building EMS for the company. I also owe gratitude to all the employees at the company for participating in the survey and interviews. This would not have been possible without you! Warm thanks also to my supervisors and closest family who have helped and supported me along the way.

1   INTRODUCTION

"Ultimately, employee support is a key driver of sustainability within the business"
(UNEP 2011).

Environmental management systems (EMSs) are important voluntarily tools that offer companies a systemic approach to environmental management and a solution to contribute to the environmental pillar of sustainability (International Organization for Standardization, 2015). The international standard ISO 14001 is the most well-known framework for EMSs, and it is seen as the cornerstone for environmental management. EMS is nevertheless merely the technical hard side of the management system, which brings the frames for organisational environmental management. In addition, engagement is needed from the employees and management to ensure the successful implementation of the EMS. Without proper employee engagement with environmental work, and hence an effective change, and greening of organisational procedures, the EMS will be left without a real effect and positive environmental results. Therefore, it is vital for a company to acknowledge the central role of employee engagement and focus on enforcing and also evaluating its state to ensure successful implementation of EMS and other sustainability initiatives.

I was given the opportunity to build EMS for a Finnish company called Muovilami Oy. The EMS was built according to the requirements set in the ISO 14001:2015 standard. As stated, employee engagement is essential in enabling real change and greening of the organisation when building and implementing the EMS. Therefore, there is a well justified rationale, but also practical reasoning, to study how employee engagement with environmental work (also referred to as environmental employee engagement), develops in the case company. Being able to both build the EMS and simultaneously conduct longitudinal research on employee engagement was both personally motivating but also useful for building the management system. The knowledge attained in making the study on employee engagement benefited the practical designing of the EMS, as making the first round of data collecting gave valuable information for building the system and acknowledging the possible challenges related to employee perspective and engagement.

1.1   Research tasks

Employee engagement has become a popular research topic because of the current belief that higher employee engagement correlates with higher performance (Hough, Green, & Plumlee, 2015) on both individual and organisational level (Sun and Bunchapattanasakda, 2018). Engaged employees are noticed to be more

productive (Harter et al., 2002; Rich et al., 2010 both cited in Potoski & Callery, 2018) and eager to put extra effort into their work (Grant, 2012; Rodell, 2013; Temminck et al., 2013, all cited in Potoski & Callery, 2018), which reflects positively on organisations financial return (Sun and Bunchapattanasakda, 2018). Higher engagement supports the organisational commitment and positive behaviour, which improves customer satisfaction among other things (Sun and Bunchapattanasakda, 2018).

As there is a growing demand for more sustainable measures in companies, and it has been acknowledged that without proper employee engagement policies management systems will be left useless, the focus has turned on studying the roles of various factors affecting employees´ engagement with environmental work. Paillé, Chen, Boiral, and Jin (2014) and Renwick, Redman and Maguire (2013) have studied the role of human resource management (HRM) on increasing employee engagement with environmental work. Authors concluded in their studies that organisations are not yet using the full potential of HRM practices to promote the engagement of employees with environmental work. The failure of traditional HRM has led to the creation of a concept of Green HRM (GHRM) which agenda is to promote employee's skills, engagement and motivation with environmental work in order to better reach the organisation's sustainability goals (O'Donohue & Torugsa 2016). The leading thought of GHRM is that organisations should take employee´s environmental engagement into account already at the recruiting phase to ensure that they hire only people with a high level of engagement with environmental work. Regardless of the increased research also in the area of GHRM and its role regarding employee engagement, the discussion is mainly on the role and possibilities of GHRM in promoting green behaviour at the workplace (Ababneh, 2021), rather than on offering tools or models to measure the level of employee engagement regarding environmental work or initiatives. Potoski & Callery (2018) have assessed the effects of peer communication programs on environmental employee engagement in the retail banking operation. Their study showed that peer communication could have a positive impact on employee engagement.

Cantor, Morrow, and Blackhurst (2015) have investigated the supervisors' influence on employee engagement, and concluded that when environmental work is valued and encouraged by the company and the top management, employees are more likely to be engaged in environmental work and achieving the set environmental goals (Cantor et al., 2015; Paillé et al., 2014; Raineri & Paillé, 2016). The top management should be leading the way, be engaged in environmental work, and give environmental protection the needed importance and value. Raineri and Paillé (2016) have investigated the social–psychological mechanisms leading individuals in organisations to engage in environmental citizenship behaviour. Their study indicated surprisingly that corporate environmental policy is more likely to impact an employee's environmental engagement when there is a weak personal ecological belief.

Employee engagement is often studied by conducting employee attitude surveys (Robertson-Smith & Markwick, 2009). There are some previous theses which have studied environmental attitudes and employee engagement regarding EMSs (Ala-Lipasti, 2004; Hämäläinen, 2006) or the state of employee environmental awareness related to EMSs and environmental management (Heikkinen, J., 2009). Tofferi & Kuitunen (2012), McCunn, and Gifford (2012) have studied how Green Offices affect employee´s engagement and environmental attitudes. Onkila (2002) has examined the creation of green corporate culture and the role of engagement and EMSs as drivers for the greening of the corporate culture. United Nations Environment Programme (UNEP, 2011) has conducted a global survey that explored the state of environmental employee engagement in financial institutions. Their survey revealed the main drivers for environmental employee engagement and also the common strategies used to promote it. According to the survey, financial institutions utilise rather similar methods to engage employees with environmental work, such as awareness-raising activities, establishing teams, training and contest challenges. It is also raised that awareness-raising and empowering employees with environmental initiatives can support better environmental performance.

To conclude, although there is an abundance of research on employee engagement, there is a lack of research focusing on employee engagement with environmental work (Parker 2005 as cited in Albelda Pérez, Correa Ruiz, & Carrasco Fenech, 2007), or offering instruments to assess employee engagement regarding environmental work. Promoting research in the area of management systems and engagement is needed as it can offer valuable information on how to improve organisations employee engagement and their sustainability performance.

As there is not yet readily made models to directly assess employee's engagement with environmental work, it´s often studied by conducting environmental attitude surveys or assessing employee's environmental awareness as a sort of indicators of engagement instead. Also, in this study, employee engagement was surveyed by creating an environmental attitude and awareness questionnaire before building the EMS and conducting interviews in the final stages of the building process. In addition, engagement was measured by using theory-based content analysis, which was carried out through using key concepts regarding employee engagement applicable to environmental work. Hence, the research is defined as a case study carried out as a longitudinal study, using mixed method research.

The research tasks are:
-How do employees' environmental attitudes and awareness develop while building the EMS?
-How does the development of employees' environmental attitudes and awareness indicate the development of environmental employee engagement?

1.2   Introduction of the case company

Muovilami Oy is one of the largest manufacturers in Europe, specialized only in manufacturing GRP (glass reinforced polyester) doors. Muovilami Oy has over 40 employees, and its head office and factory are located in Ähtäri, Finland. The company has subsidiaries in Great Britain, Sweden and a sales office in Russia. There are also several commercial agents and retailers abroad, for example, in Norway and Denmark. These together form the entirety of Lami Doors Group. Half of the production is exported worldwide (Lami Doors, 2020a).

LAMI doors are manufactured using a special pressure moulding process, in which a door leaf is left completely seamless and without joints or lippings and is thus suitable especially for internal premises that demand hygiene, water and moisture resistance and durability. The company manufactures fire doors, acoustic doors and x-ray doors, as well as standard single action and double action doors. All LAMI doors are custom made, and the wide range of door sizes, colours, vision panels and accessories are manufactured according to the customers own specification (Lami Doors, 2020b).

Typical customers of Lami Doors Group are:

- Hospitals and Animal Clinics
- Pharmaceuticals, Laboratories and Cleanrooms
- University Research Facilities
- Schools, Nurseries and Care Homes
- Spas, Swimming Pools and Leisure Centres
- Hotels, Restaurants and all Commercial Kitchens
- Supermarkets and all Food Preparation Areas
- Chemical and Electrical Industries and Warehouses
- Water Treatment and Agricultural Buildings

1.3   The process of building the EMS

The EMS building process is focused on the premises of the company's main office and factory in Ähtäri, Finland. The building of the EMS started during the early fall of 2019. As Muovilami did not have any certified management system previously, merely an inner factory production control manual for quality management, building the management system started in many parts "from scratch". During the first two weeks, I mostly worked at the factory and office in Ähtäri, to familiarize myself with the company and all its actions and processes, after which I worked mostly remotely, being present at the office and factory 1-3 days per week. This seemed the most efficient way of working since I divided the process of building the EMS into smaller entities, having work objectives for every

week. This way, all the independent work and preparations were conducted at the home office, and when more information or approval of my work to proceed was needed, I visited the main office. The process was carried out mainly with the executive vice president, executive president, the factory manager, and the designer.

The process of building the EMS is described in FIGURE 1, which illustrates the main parts and outcomes of the process, as well as the harsh timetable. It must be stated that the process was not as simple as the figure implies; instead, the process was rather iterative, as some analysis, determinations and plans were later improved or even redesigned after new ideas, new information, or, e.g., decisions regarding the EMS was given from the management or experts. The iterative nature of the building process is also resulted from the fact that many of the different parts of the EMS are strongly interconnected and interact with each other. Hence redesigning or making correction in one part of the system easily resulted in changes in other parts as well.

Firstly, the company's environmental review from the year 2000 was updated to assess and define what is the current state and level of the company's environmental work. As part of the overview, information of all the processes and actions of the company was gathered by observing and interviewing the employees and management. One of the most central entities of the EMS was to determine the environmental aspects and environmental impacts of the company's actions and processes and determine the most significant environmental aspects, which needed to be of high priority in implementing the EMS. The company's external and internal issues were determined by conducting SWOT and PESTEL analysis. Also, stakeholder analysis was conducted in order to define who are the most important stakeholders and what are their needs and expectations regarding EMS, and which of these needs and expectations needed to become compliance obligations for Muovilami. The analysis of compliance obligations regarding environmental issues included legal requirements.

Analysis of the risks, threats and possibilities related to the company's most significant environmental aspects was also a central analysis during the process, which included, e.g., risks and threats related to compliance obligations, its context, and stakeholder requirements. The analysis of the possibilities regarding environmental issues is central when the company aims to determine what is the scope of the EMS. The scope was determined in the light of the company's actions and processes, the external and internal issues, compliance obligations and the company's ability to exercise control and influence on different environmental matters. At this stage, it was decided that the EMS will, at this point, focus solely on the premises and factory in Ähtäri.
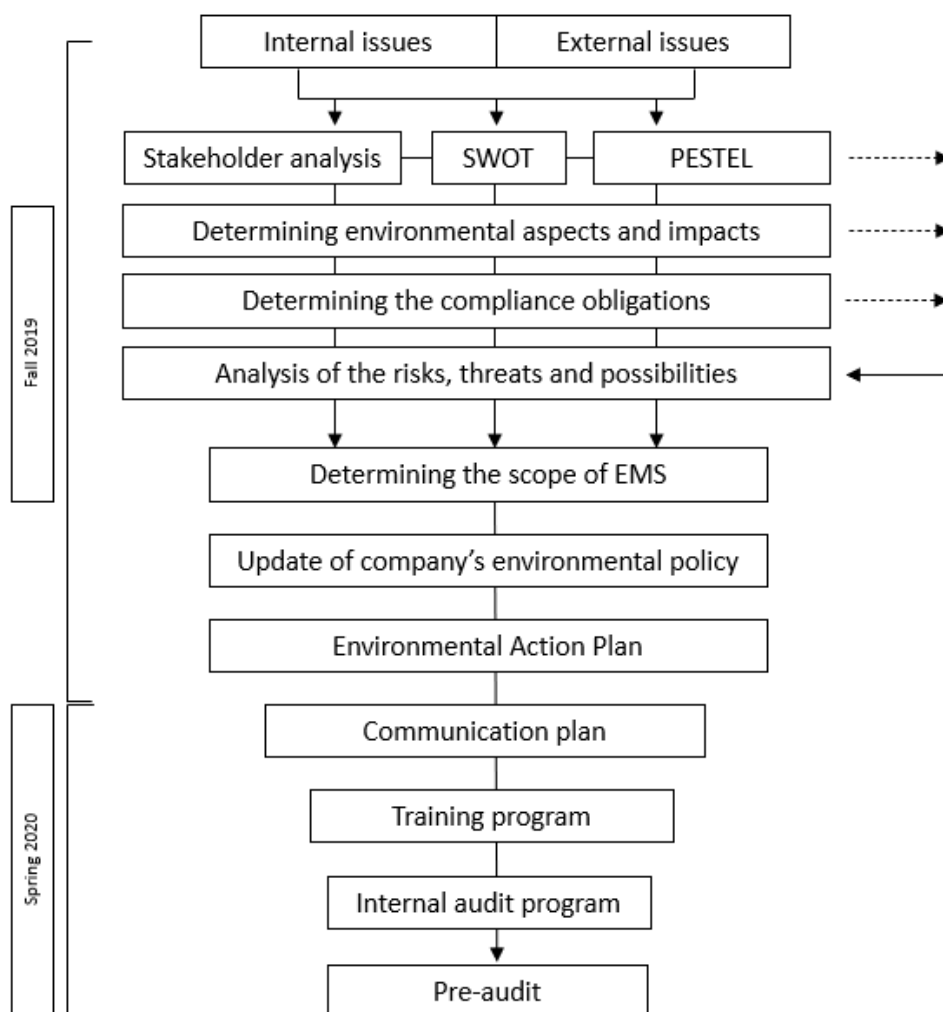
FIGURE 1 The process of building the EMS.

The company's environmental policy was updated in cooperation with the management to better meet the requirements of the ISO standard and to better entail the key issues raised previously in the EMS process, as the policy should be well aligned, e.g., with the purpose of the company and its context. In addition, the standard requires that the policy must offer a proper foundation for setting environmental goals and entail a commitment to environmental protection, fulfilling one's compliance obligations, and continuous improvement (International Organization for Standardization, 2015, pp.70–71). As part of this process company's environmental and quality policies were combined, instead of being separate documents and declarations, since they in many parts were already coherent and supported one another.

One of the central documents in an EMS is also the environmental action plan which, e.g., entails environmental objectives, timetable and actions needed to reach the objectives. The action plan was set for the following three years and designed according to the most significant environmental aspects.

Muovilami is part of the industry manufacturing fibre-reinforced plastic, in which a lot of hazardous chemicals is consumed. According to the environmental review conducted, the most significant environmental impacts are related to the consumption and storing of hazardous chemicals, creation of waste and material loss in the different parts of the manufacturing process. The most significant environmental impact is caused due to the consumption of organic solvents (e.g., styrene, acetone), as they emit volatile organic compounds (VOC). VOCs contribute to the formation of tropospheric ozone and smog and are also indirect greenhouse gases. Also, a lot of waste and material loss is produced in the different parts of the manufacturing process. Consumption of hazardous chemicals also requires high standard risk management and work safety from the company (Vainioranta, 2020). The first action plan was decided to have a focus especially on improving material efficiency in the manufacturing processes, which both decreases loss of material but also reduces harmful emissions. The focus will also be on reducing harmful impacts of using chemicals and improving employee's environmental awareness through environmental training.

The ISO 14001 standard requires keeping employees posted on issues regarding EMS, as it is a vital part of engaging employees in the environmental work. The communication plan was conducted, and included information and guidance for, for example, what, when, with whom and how to communicate information regarding EMS and environmental issues.

During the spring of 2020, one of the final main duties was to create a training program, training material and train the employees (20 factory workers and 20 office workers) in small groups. The aim was to ensure, employees are aware of 1) the updated environmental policy; 2) the significant environmental aspects and related actual or potential environmental impacts associated with their work; 3) their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance; 4) the implications of not conforming with the environmental management system requirements.

I also designed an internal audit program which included guidance to make management reviews to monitor, measure, analyse and evaluate the performance of the EMS and support continuous improvement of the EMS. I also ensured proper and easily applicable documentation for the EMS and created electrical files structure and documentation, which the company can use as such. I also formulated guidance to manage and update all the EMS documents in a coherent way. During February, I also coordinated the external pre-audit of the EMS and afterwards conducted the required changes to better meet the requirements of the standard according to the audit. Because of the extraordinary times of COVID 19, the process of building the EMS into finalised version has been rather slow.

Nevertheless, the goal for Muovilami is that the final inner audit and audit conducted by an official auditor will be conducted in the near future.

2   THEORETICAL FRAMEWORK

The theoretical framework of this study consists of the following key concepts: *environmental work (incl. EMS, ISO 14001 standard), environmental attitudes, environmental awareness and employee engagement.*

2.1   Environmental work

The term environmental work is often applied when discussed of organisations´ environmental activities or handling of environmental issues. Environmental work and its scope variates depending on the field in which the organisation operates. For example, every business sector has its most typical environmental impacts and actions and interested parties. Environmental work typically entails areas such as environmental programs, environmental education, training, and communication associated with environmental issues.

   Successful management of environmental work requires systematic planning, steering and following from the organisation (Pesonen, Hämäläinen & Teittinen, 2005). EMSs offer important voluntarily tools for organisations to manage their environmental impacts and improve their environmental performance (International Organization for Standardization, 2015). EMSs are not merely for companies, but they can also be adopted by public organisations, such as municipalities. The international standard ISO 14001 and the Eco Management and Audit Scheme (EMAS) are the two most used standards that set requirements for EMSs (Testa et al., 2014). EMAS is a management instrument developed by the European Commission and is regulated by the European Regulation EC 1221/2009. EMAS is based on an environmental system built according to the ISO 14001 standard; therefore, a company already complying with the ISO 14001 standard can rather easily adopt also EMAS. Similarly to ISO 14001 standard, EMAS is also developed for companies and other organisations to evaluate and improve their environmental performance, but, comparing to ISO 14001, EMAS requires giving publicly available information on an organisation's environmental performance (European Commission, n.d.a). Thus, EMAS is a broader system comparing to the ISO 14001 standard. Organisations and sites that have achieved EMAS registration are listed in an online database hosted by the European Commission (European Commission, n.d.b).

   The international standard ISO 14001 is the most well-known framework for EMSs, and it is seen as the cornerstone for environmental management. The level of detail and complexity of EMS varies depending on the context of the organisation, the scope of its EMS, its compliance obligations, and the nature of its activities, products, and services, including its environmental aspects and associated environmental impacts (International Organization for Standardization,

2015, p.48). Hence having EMS does not evidently mean excellent management of environmental issues or of a certain level of environmental protection but merely gives a framework for its environmental work and pushes to continual improvement (Pesonen et al., 2005). The latter being the central principle of environmental management. The goal is to constantly develop actions and at the least reach the set environmental goals.

EMSs are based on the Deming cycle model (plan, do, check, act), which gives organisations a model of an iterative process to reach continual improvement in their environmental management (See FIGURE 2). Simply put, in EMS created according to the 14001 standard, "plan" includes setting environmental objectives and processes needed to reach the commitments declared in the organisation's environmental policy, "do" refers to implementing the processes, "check" consists of monitoring, measuring the processes in the light of the environmental policy and its commitments, and operating criteria, and also reporting the results, whereas "act" stands for the continual improvement in the environmental management. From FIGURE 2, it is seen that the context of the organisation, internal and external issues, needs and expectations of interested parties all affect the scope of the environmental management system (International Organization for Standardization, 2015, p.48). For successful implementation of EMS, its essential that the EMS processes are integrated as part of the business processes, and implementation of EMS is part of the daily processes, instead of something done separately.
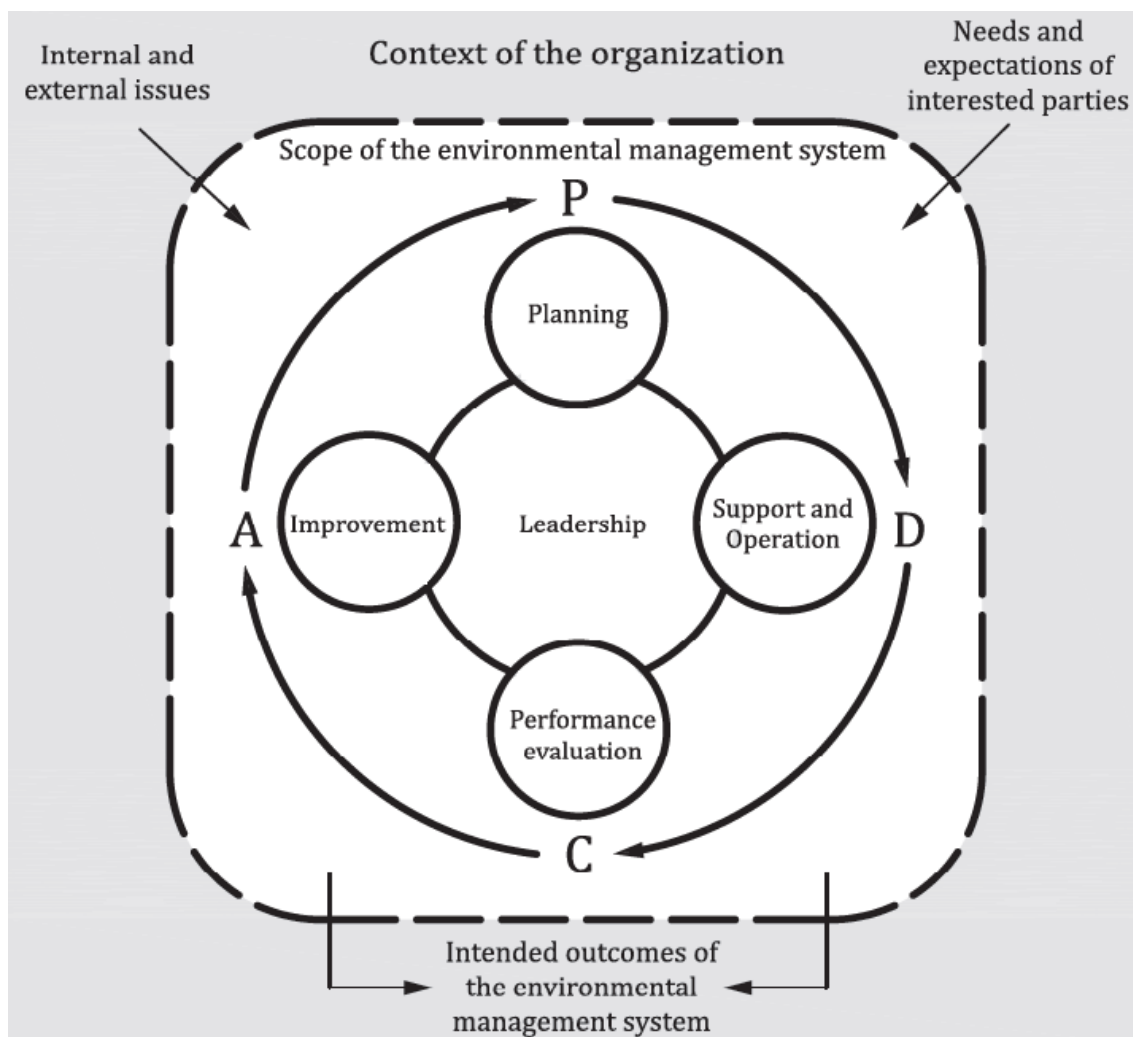
FIGURE 2 Relationship between PDCA and ISO 14001 standard (International Organization for Standardization, 2015, p.48).

Employee's training is crucial in ensuring that employees are aware of how to prevent and decrease harmful environmental impacts related to their own work. The top management has a central role in motivating employees into environmental work and promoting environmental awareness. Training and sharing information should be utilised in engaging employees with environmental work (Pesonen et al., 2005).

The ISO 14001:2015 standard has various requirements concerning organisations environmental management. Whilst adopting an EMS, the organisation has to be committed to continual improvement of environmental protection; identify environmental impacts of its products, services and actions; define its legal obligations and take care of their fulfilment; set environmental goals and follow achieving them; provide the needed resources and employee competence for successful implementation of EMS; anticipate environmental risks and accidents; monitor environmental impacts; prevent environmental damage; maintain

good environmental practises and assess the results and continue improving its actions (Finnish Standards Association, n.d.).

Successfully implemented EMS can offer many business benefits for companies. It can support integrating environmental issues into business strategies and organisational planning. ISO 14001:2015 sets requirements for employee training and ensuring employee awareness, which aims to promote employee's involvement with the EMS and support the successful implementation of EMS. ISO 14001:2015 requires identifying the most relevant environmental aspects and their associated environmental impacts, preferably using a life cycle perspective. This promotes taking environmental impacts into account in different phases of the supply chain. Successfully implemented EMS can increase the company's competitiveness due to the efficient use of raw materials and energy and thus improved cost-efficiency. ISO 14001:2015 requires identifying the needs and expectations of interested parties, which can support anticipating changes in the context of the organisation. EMS can also be beneficial in offering a more systematic approach to legal compliance. Most important, implementing EMS can improve a company's risk management and secure the continuity of operations. The adoption of EMS shows responsible management of environmental issues in the eyes of interested parties. EMS built according to ISO 14001:2015 standard also pushes companies to improve their environmental communication and corporate image (Finnish Standards Association, n.d.).

ISO 14001:2015 standard contains the requirements used to assess the conformity of one's EMS. An organisation that wishes to demonstrate conformity with the standard can make a self-determination and self-declaration or seek certification by an external organisation (International Organization for Standardization, 2015, p.49). Auditing conducted by an external, accredited party creates credibility for organisations environmental work but is not mandatory. The certification is valid for three years, after which the certification needs to be renewed. In 2019 the total number of accredited 14001 certificates was globally 312 580, covering 487 950 sites, the growth in 14001 certificates being 2 per cent comparing to the previous year (International Organization for Standardization 2019).

2.2   Environmental attitudes

Environmental attitudes (EA) are a popular and central research subject in environmental psychology (Milfont & Duckitt, 2010), but there are only a few studies concentrated on the development of employees environmental attitudes with environmental work, such as studies by Koskela (2004) and McCunn and Gifford (2012). Most of the research discussing environmental attitudes are concentrating on environmental attitudes in a general level or either concentrating on a certain group of people such as youth (Järvinen, 1995), citizen in a certain city or town or nation (See, e.g., Department for Environment, Food and Rural Affairs in the United Kingdom, 2014; Hakkarainen & Koskinen, 2011; Hirvonen & Vanhatalo,

2018; Lynn & Longhi, 2011). There is also an abundance of research discussing measuring of EA, such as in the studies by Dunlap, Liere, Mertig., and Jones (2000), Kaiser, Merten & Wetzel (2018) and Milfont and Duckitt (2010).

2.2.1 The structure of environmental attitudes

In social psychology, attitudes are thought to have some social object and consists of the knowledge about the object and of the feeling which is related to it (Erwin, 2005, p.1). According to Stangor, Jhangiani, and Tarry (2014, p.168), attitudes can be seen as evaluations because they entail evaluations of the attitude object, such as "prefer, like, dislike, hate or love". Thus, communicating our attitudes is actually about communicating our relationship between ourselves and the object (Stangor et al., 2014, p.168). Most present-day social psychologists agree with Stangor et al. (2014) that the characteristic feature of attitude is its evaluative nature (Ajzen, 2005).

Allport (1954 in Erwin 2001/2005, pp.12–13) has proposed perhaps the most famous definition of attitude, defining it as "a learned predisposition to think, feel and behave toward a person (or object) in a particular way." The definition emphasises that attitudes are socially constructed and are the results of experience. Also, according to Erwin (2005), the mentioning of predisposition is essential in the definition, as it implies that attitudes pre-exist the object with which they are associated. Simply put, attitudes are about a tendency to respond either positively or negatively. Erwin also suggests an interpretation that by defining attitudes as a learned predisposition, it presents attitudes as a sort of schema or a framework through which we look at the world, and thus, determining greatly how one sees and interprets the world. Erwin states that the very core of the definition refers to the classic three-component attitude model, which is based on the thought that attitudes have cognitive, affective and behavioural components.

Stangor et al. (2014) argue that regardless that most attitudes consist of components of affect, behaviour, and cognition, it depends on the object and people, which component is having more emphasis. Some attitudes being more based on feeling, some on behaviour, and some more on belief. All in all, attitudes are vital in our everyday life, as they enable us to interpret our environment, guide our behaviour in social situations and helps us to conclude quickly and without a lot of effort which actions to take or to avoid (Erwin, 2005; Stangor et al., 2014).

Although EA are a popular research subject in environmental psychology, there is no one clear, commonly accepted definition of the concept of EA nor consensus on the construct of it. At its simplest, EA can be defined similarly as attitudes, as "psychological tendency expressed by evaluating the natural environment with some degree of favor or disfavor." (Milfont & Duckitt, 2010, p.80). Also, some researchers have used the same classic three-component attitude model to define the structures of EA, arguing that EA have merely cognitive, affective, and behavioural components (Milfont & Duckitt, 2010, pp.80–81).

Stangor et al. (2014, p.171) have illustrated practical example of environmentalist´s attitude towards recycling by using the three-component attitude model. The authors propose examples of certain feelings, behaviour and cognitional issues related to recycling:

- *In terms of affect: They feel happy when they recycle.*
- *In terms of behaviour: They regularly recycle their bottles and cans.*
- *In terms of cognition: They believe recycling is the responsible thing to do.*

It seems, nevertheless, that the academic world has not settled for the classic three-component attitude model in the case of EA as there are many studies concentrating on more complex dimensionality of EA. Although several researchers still prefer EA as unidimensional, there seems to be some kind of consensus that EA's structures are multidimensional and organized in a hierarchical fashion. However, it remains unclear how many dimensions form the structures of EA (Milfont & Duckitt, 2010, pp.81–82). Based on Milfont & Duckitt (2010, p.89) study, EA are a multidimensional constructs with at least twelve core dimensions forming their horizontal structures, as vertical structures of EA consists of second-order (higher-order) dimensions such as Generalised Environmental Attitudes or Preservation and Utilisation. In environmental attitude inventory scale (EAI) the twelve dimensions of EA are interlinked and meant to offer solution to comprehensively measure one's EA and entailed various scales to assess one's beliefs, concerns regarding the natural environment or attitudes regarding conservation or related policies (See TABLE 1.).

TABLE 1 The environmental attitudes inventory scales by Milfont & Duckitt (2010, pp. 89–91).

Scale label	Construct definition
Scale 1. Enjoyment of nature	Belief that enjoying time in nature is pleasant and preferred to spending time in urban areas, versus belief that enjoying time in nature is dull, boring and not enjoyable, and not preferred over spending time in urban areas.
Scale 2. Support for interventionist conservation policies	Support for conservation policies regulating industry and the use of raw materials, and subsidising and supporting alternative ecofriendly energy sources and practices, versus opposition to such measures and policies.
Scale 3. Environmental movement activism	Personal readiness to actively support or get involved in organized action for environmental protection, versus disinterest in or refusal to support or get involved in organized action for environmental protection.
Scale 4. Conservation motivated by anthropocentric concern	Support for conservation policies and protection of the environment motivated by anthropocentric concern for human welfare and gratification, versus support for such policies motivated by concern for nature and the environment as having value in themselves.
Scale 5. Confidence in science and technology	Belief that human ingenuity, especially science and technology, can and will solve all environmental current problems and avert or repair future damage or harm to the environment, versus belief that human ingenuity, especially science and technology, cannot solve all environmental problems.
Scale 6. Environmental fragility	Belief that the environment is fragile and easily damaged by human activity, and that serious damage from human activity is occurring and could soon have catastrophic consequences for both nature and humans, versus belief that nature and the environment are robust and not easily damaged in any irreparable manner, and that no damage from human activity that is serious or irreparable is occurring or is likely.
Scale 7. Altering nature	Belief that humans should and do have the right to change or alter nature and remake the environment as they wish to satisfy human goals and objectives, versus belief that nature and the natural environment should be preserved in its original and pristine state and should not be altered in any way by human activity or intervention.
Scale 8. Personal conservation behaviour	Taking care to conserve resources and protect the environment in personal everyday behaviour, versus lack of interest in or desire to take care of resources and conserve in one's everyday behaviour.
Scale 9. Human dominance over nature	Belief that nature exists primarily for human use, versus belief that humans and nature have the same rights.
Scale 10. Human utilization of nature	Belief that economic growth and development should have priority rather than environmental protection, versus belief that environmental protection should have priority rather than economic growth and development.
Scale 11. Ecocentric concern	A nostalgic concern and sense of emotional loss over environmental damage and loss, versus absence of any concern or regret over environmental damage.
Scale 12. Support for population growth policies	Support for policies regulating the population growth and concern about overpopulation, versus lack of any support for such policies and concern.

There are several authors agreeing that as traditionally, attitudes have been defined to have cognitive, affective, and behavioural elements, EA could instead be better defined to have Preservation and Utilisation dimensions, these two being higher-order factors that form the vertical structures of EA (Gifford & Sussman, 2012; Milfont & Duckitt, 2006; Milfont & Duckitt, 2010; Wiseman & Bogner, 2003). Preservation being the biocentric dimension reflecting the attitudes regarding conservation and protection of the environment and protecting it from human use and alteration, and utilisation, in contrast, being the anthropocentric dimension, expressing the general belief that it is appropriate and necessary for nature

and species to be exploited by humans (Milfont & Duckitt, 2006, p.36). Although higher-order dimensions can already be seen accepted as standard (Milfont, Duckitt, & Wagner, 2010; Wiseman & Bogner, 2003), there is no consensus about the amount of higher-order dimensions in the vertical structures of EA. The proposals of EA as complex constructs, having multiple dimensions and also higher-order dimensions reflect the special features of EA.

2.2.2 Measuring environmental attitudes

Rather controversially comparing to the classic three-component attitude model, Erwin (2005) states that attitudes are seen as hidden processes, and there is uncertainty whether attitudes come visible at all in human behaviour. As attitudes are ultimately hypothetical, latent constructs, they cannot be seen or measured directly. Attitudes come visible only through behaviour. Thus, attitudes can be measured by either observing individuals or using self-reports of the individual concerned (Erwin, 2005; Milfont & Duckitt, 2010). Attitudes can be assessed indirectly also by measuring arousal and facial expressions, using implicit measures of cognition or using neuroimaging techniques (Stangor et al., 2014)**.** There are hundreds of EA measures that are based on different kinds of conceptual and theoretical frameworks. Attitude measurements can be categorized into direct self-report methods and implicit measurement techniques (Krosnick, Judd & Wittenbrink, 2005 cited in Milfont & Duckitt, 2010). Direct self-report methods such as interviews and questionnaires are the most commonly used methods, in which various attitude scales and inventories are utilised. Whereas observation, priming and response competition measures are less commonly utilised implicit methods (Milfont & Duckitt, 2010, p.80). Regardless of multiple EA assessment scales, only three have been widely utilised as valid and reliable methods (Dunlap & Jones, 2003; Fransson & Gärling, 1999, both cited in Milfont & Duckitt, 2010). These are the Ecology Scale, the Environmental Concern Scale, and the New Environmental Paradigm (NEP). All three scales assess EA by investigating various phenomena or expressions of concern, such as beliefs, attitudes, intentions and behaviours. In addition, they assess concerns regarding various environmental topics, such as pollution and natural resources (Milfont & Duckitt, 2010, p.81). Similarly to the many measurements described previously, also NEP scale aims to assess whether individual possesses a biocentric or rather an anthropocentric worldview (Wiseman & Bogner, 2003). NEP scale is one of the most famous and widely used scale to assess EA and pro-environmental orientation. The NEP scale was first published in 1978 by Dunlap and Van Liere but has been improved in 2000 and renamed as the New Ecological Paradigm Scale. The aim was to include a broader set of environmental dimensions (in total 15 items) and to offer a more balanced set of items, and to avoid outdated terminology. The NEP scale includes statements about the relationship between humans and the environment concerning five different aspects of ecological worldview: "the reality of limits to growth", "anti-anthropocentrism", "the fragility of nature's balance", "rejection of exemptionalism" and "the possibility of an Ecocrisis" (Dunlap et al., 2000). See

TABLE 2 in which is presented the statements to which individual should indicate whether strongly agree, mildly agree, is unsure, mildly disagree or strongly disagree.

TABLE 2 The NEP scale statements regarding the relationship between humans and the environment. (Dunlap et al., 2000, p. 90).

1. We are approaching the limit of the number of people the earth can support.
2. Humans have the right to modify the natural environment to suit their needs.
3. When humans interfere with nature it often produces disastrous consequences.
4. Human ingenuity will insure that we do NOT make the earth unlivable.
5. Humans are severely abusing the environment.
6. The earth has plenty of natural resources if we just learn how to develop them.
7. Plants and animals have as much right as humans to exist.
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
9. Despite our special abilities humans are still subject to the laws of nature.
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.
11. The earth is like a spaceship with very limited room and resources.
12. Humans were meant to rule over the rest of nature.
13. The balance of nature is very delicate and easily upset.
14. Humans will eventually learn enough about how nature works to be able to control it.
15. If things continue on their present course, we will soon experience a major ecological catastrophe.

Both Ecology Scale and the Environmental Concern Scale, although utilised extensively, include some outdated items and environmental topics, but the NEP scale has succeeded in avoiding this in doing the revision of the scales and measuring more generally person's relationship with the environment by using more general environmental topics instead of specific ones (Milfont & Duckitt, 2010). Milfont & Duckitt (2010) also state that although there are several scales measuring, not one is capable of taking into account the many dimensions of EA, nor there is any common agreement of the best assessment scale for EA as "the gold standard measure" in the literature. Therefore, Milfont & Duckitt (2010) created themselves a new theoretical approach to the measurement of EA which is called the environmental attitudes inventory (EAI). The EAI was specifically developed to take better into account the multidimensional and hierarchical structure of EA. The EAI assess comprehensively the perceptions of or beliefs regarding the natural environment based on earlier studies. As stated previously, the EAI classifies preservation and utilisation dimensions into 12 subfactors. These twelve EA primary dimensions are identified in TABLE 1. Each subfactor, dimension, entail ten statements; therefore the EAI scale consists of a total of 120 statements through which EA is evaluated. According to Gifford and Sussman (2012), the EAI is extensive and appears to have strong theoretical and empirical support, despite its length.

To conclude, there is not one commonly accepted definition of EA or construct of it, nor consensus on the supreme option for attitude assessment. Nevertheless, it can be stated that EA are multidimensional and have many different perspectives that should be taken into account when assessed. As the research task was mainly to investigate employees' EA regarding environmental work, instead of general EA, the NEP scale and EAI scales are not suitable as such for these purposes. Regardless, familiarizing with the EAI and NEP scales enabled understanding the multidimensionality of EA and taken it into account when choosing the most suitable and central questions assessing employees general EA. The utilisation of the NEP scale and EAI scale in this research is further contemplated in chapter 3.2. Regardless of taking into account the multidimensionality of the concept, in this research, EA are foremost defined and approached as having cognitive, affective and behavioural components as the three-component model was the most coherent approach for handling also all the other key concepts (environmental awareness and employee engagement) discussed in this research.

2.3 Environmental awareness

Environmental awareness has also become an increasingly popular research topic that is widely studied in Finland and abroad. In literature, environmental awareness and attitudes are often seen as interlinked concept, as attitudes can be seen as part of the development of environmental awareness (See, e.g., Heikkinen, J., 2009).

2.3.1 The structure of environmental awareness

The concept of environmental awareness is often used rather vaguely in literature (Kortelainen, 1994) and has many definitions, but similarly to environmental attitudes, it is often defined as having components of knowledge, attitude and action. According to the early models of pro-environmental behaviour, environmental knowledge rather linearly leads to environmental awareness and concern and pro-environmental behaviour (Kollmuss & Agyeman, 2002), whereas nowadays, knowledge and attitudes are often seen as part of the entirety of environmental awareness, and the causality between awareness and pro-environmental behaviour is seen not so evident (Harju-Autti, 2011; Suopajärvi, Kynsijärvi, Uusisalmi, Tikkanen, & Valkonen, 2016). Nevertheless, environmental awareness building can be seen as one of the catalysts for sustainable change (Albelda Pérez et al., 2007).

Kollmuss and Agyeman (2002, pp.253–254) define environmental awareness as "knowing of the impact of human behaviour on the environment". In their definition, environmental awareness is constructed of merely cognitive component and an affective component. The authors argue that the affective

component of environmental awareness is entailing emotional involvement, which is a central factor shaping our beliefs, values and attitudes towards the environment. The authors define emotional involvement as the ability to react emotionally to environmental problems and state that it is often a learned ability. The stronger the reaction, the greater the chance that one would engage in pro-environmental behaviour. Also, emotional involvement demands a certain level of environmental knowledge and awareness. On the other hand, the authors acknowledge that a high level of environmental awareness does not evidently lead to acting ecologically, as other factors also have their effect. Whereas Harju-Autti (2011 ,p.8) define environmental awareness similarly to the classic three-component model, as a combination of three components: a) values, attitudes and motivation, b) knowledge, and c) skills.

Although there is not a full agreement on whether the actional component is included, Harju-Autti (2011) argues that environmental awareness is strictly connected to practical actions – regardless of the concept's abstract nature. Harju-Autti continues by stating that in environmental awareness, motivation is the driving force – the will, which activates the person to act in a certain way. Concerning motivation also values and attitudes are important. The motivational component entails concern regarding environmental problems, the impression of one's responsibility and ability to influence, and last but not least, the will to act. Definition of the motivational component of environmental awareness has similarities to the concept of environmental attitudes in the NEP scale, in which assessment of employees' expressions of environmental concern and intentions is included. Also, in environmental attitude surveys, the impression of one's responsibility, the ability to influence and the will to act is often assessed.

Regarding environmental awareness, knowledge entails information about environmental problems, their causality and structural possibilities for environmentally friendly actions, whereas skills and abilities to act consists of different levels, such as consumption, political activities and voluntary activities and the different spheres of environmental awareness (e.g. private life, working life, political life) and habits and conscious actions (Harju-Autti, 2011; Partanen-Hertell, Harju-Autti, Kreft-Burman, & Pemberton, 1999).

Similarly, to Harju-Autti (2011) also Suopajärvi, Kynsijärvi, Uusisalmi, Tikkanen and Valkonen (2016) define environmental awareness as an entity containing knowledge, attitudes and action, knowledge being the base, which is interpreted depending one's own attitudes. Therefore, attitudes define the way information is responded to regarding the environment.

Kortelainen (1994) has defined the concept rather similarly as Harju-Autti (2011) and Suopajärvi et al. (2016), stating that environmental awareness has three levels in which knowledge of the environment (and related problems) form the base, next level entails attitudes which affect the way information is responded, and the third level includes actions and in addition, intentions, which is activated by attitudes or information.

It is nevertheless acknowledged by Harju-Autti (2011) that the dynamics between the three components of environmental awareness (motivation, knowledge and skills) is not so clear. Although we have the knowledge, we do not always apply the information in practice. Those that have resources and knowledge do not always have the will to make environmentally sound actions. People with knowledge but lack of skills will not (regardless of attempts) succeed in their efforts. Also, motivation without knowledge will not most likely help to reach environmentally sound goals (Lundgren 1999, as cited in Harju-Autti, 2011).

Also, Suopajärvi et al. (2016) raise the notion that knowledge, attitudes, and action do not necessarily form a uniform entity, as, for example, increased awareness of climate change does not necessarily lead to attitudinal change nor behavioural change. Similarly, Owens and Driffill (2008) state that awareness is linked to attitudes, as information may in some cases influence attitudes, but raises the perspective that attitudes are also affected by multiple other factors (e.g., social, political, cultural).

2.3.2 Measuring environmental awareness

As many definitions and interpretations of environmental awareness include attitudes as one of the central components, environmental awareness and the relation to the environment is often studied by conducting attitude surveys (Suopajärvi et al., 2016). Whereas Partanen-Hertell et al. (1999) state that there are two options for measuring environmental awareness in an individual, group, or a society: researching the three components of environmental awareness (motivation, knowledge, skills) by conducting interviews, questionnaires or tests or by measuring actual environmentally friendly choices, actions and practices of individuals, groups, organisations, or the society at large.

In employee surveys, environmental awareness is often assessed regarding general awareness of environmental issues and organisations' environmental work and the willingness to learn more about environmental issues. As described in chapter 1.3., the ISO 14001 standard sets organisations following it, requirements for ensuring a certain level of environmental awareness of the employees, which can generate certain need also to assess the level of employee's awareness. In this research, employee's environmental awareness is measured regarding general awareness of environmental issues and organisations' environmental work, and the willingness to learn more about environmental issues. Also, the requirements regarding employees environmental awareness set in the ISO 14001 standard is taken into account to best serve the building of the EMS.

Partanen-Hertell et al. (1999) have created a model for describing and analysing the development of environmental awareness. According to the model, the development of environmental awareness has four stages. Environmental awareness begins developing when a person notices adverse, threatening changes in their surroundings and acknowledge that caused damages need a long time to recover. The growing concern over threats to health creates motiva-

tion for improved knowledge and skills. Nevertheless, there is not yet an understanding of the significance of one's actions for the environment and taking account of the environmental problems is merely others responsibility (Harju-Autti, 2011). This stage is distinctive usually of the limited amount of information, skills and possibilities to act environmentally friendly. Hence the feeling of helplessness is dominant (Partanen-Hertell et al., 1999).

In the second stage, a person begins to realise that he can affect the environment, and the understanding of cause-effect relationships improves. Consequently, the feeling of responsibility and motivation to take action grows. Nevertheless, "the externalisation" of environmental responsibility is still rather common and hope for external help is strong. (Harju-Autti, 2011; Partanen-Hertell et al., 1999). Environmental issues are nevertheless becoming more as part of daily life and work. The development is faster if there is social pressure to act environmentally friendly (Harju-Autti 2011, p. 14). At this stage, both overall environmental knowledge and skills improve, although the focus is on separate environmental issues rather than perceiving environmental problems globally (Partanen-Hertell et al., 1999).

In the third stage, there is an understanding that a welfare society is depended on the environment and thus should be protected. Inspection of consumption and lifestyles from an environmental perspective becomes more significant than before (Harju-Autti, 2011; Partanen-Hertell et al., 1999). Environmental problems are perceived both locally and globally. Motivation, knowledge and skills develop further. Many environmentally friendly actions become part of daily life. The focus changes from corrective measures to preventive actions (Partanen-Hertell et al., 1999).

In the fourth stage, environmental awareness is a fundamental part of professional skills and daily choices (Harju-Autti, 2011; Partanen-Hertell et al., 1999). Motivation, knowledge and skills have evolved, and "holistic environmental awareness has developed" (Partanen-Hertell et al., 1999, p. 26). Values have disengaged from consumer-centric and are no longer based on growing consumption of natural resources (Harju-Autti, 2011; Partanen-Hertell et al., 1999) but on reaching the general wellbeing of individuals. (Partanen-Hertell et al., 1999). The environment is no longer perceived from the human-centric perspective and merely as a utility (Harju-Autti, 2011; Partanen-Hertell et al., 1999); instead it is realised to have intrinsic value (Partanen-Hertell et al., 1999). The interdependencies within the environments are understood (Partanen-Hertell et al., 1999). Handling of information has shifted from delving in details towards holistic understanding (Harju-Autti, 2011; Partanen-Hertell et al., 1999). At this stage, life has genuinely reached sustainability, and humans are comprehended as part of the "ecological entirety". (Partanen-Hertell et al., 1999, p. 26). According to Partanen et al. (1999), the fourth stage has so far been reached only by few individuals and perhaps within some organisations, and it is questionable is it ever reached by the whole society.

According to Harju-Autti (2011), in practice, environmental awareness is about understanding the relationship and interaction of one's own life and the environment. It is about the will and ability to make environmentally sound choices in one's daily life. Simply put, as environmental awareness develops, a person starts to better acknowledge all the surrounding environmental problems and solutions. The person is more tuned in detecting things in one's surroundings, which might enable more environmentally sound behaviour (Harju-Autti, 2011).

In this research, environmental awareness is defined similarly to Kortelainen (1994), Harju-Autti (2011) and Suopajärvi et al. (2016), as having the components of knowledge, attitudes and action, in which latter also includes intentions.

2.4   Employee engagement

There are numerous definitions of employee engagement. Hence there are also significant variations on what is actually assessed whilst measuring the level of employee engagement.

2.4.1 The structure of employee engagement

The definitions of employee engagement tend to be similar to many other closely related concepts such as organisational commitment and organisational citizenship behaviour (Saks, 2006). There are also similarities in the various definitions proposed by both scientists and practitioners. Common to many definitions is that employee engagement is considered as a desirable condition, entailing organisational purpose. Employee engagement is often defined to indicate involvement, commitment, enthusiasm, focused effort, and energy. Thus, suggesting that the concept includes both attitudinal and behavioural elements (Macey & Schneider, 2008). According to Robertson-Smith and Markwick (2009), the scholarly definitions of engagement are focused on outcomes of engagement (e.g., employee advocacy, commitment and supporting change), psychological state of engagement, and the mutually useful relationship between employer and employee.

Sun and Bunchapattanasakda (2018, p.63) have identified that there are present two kinds of definitions of employee engagement in the literature: engagement as a multidimensional construct, consisting of many components or dimensions or as "a unitary construct" and referred to as, for example, a positive state of mind or dedicated willingness. Engagement is defined as multidimensional, for example, when it is referred to as employees' physical, cognitive, and emotional input in work, having components of cognition, emotions and behaviours (Robertson-Smith & Markwick, 2009; Saks, 2006; Sun & Bunchapattanasakda, 2018).

Probably the most famous definition of the concept is from Kahn, who has introduced the concept of personal engagement. Kahn has stated that employees do not merely give their cognitional contribution but are also emotionally and physically involved in their work (Geethalakshmi & Rodrigues, 2017). Also, according to May, Gilson, and Harter (2004) and Saks (2006, as cited in Sun & Bunchapattanasakda, 2018), engagement consists of cognitive, emotional, and behavioural components that are associated with individual role performance.

According to Sun & Bunchapattanasakda (2018, p.75), employee engagement is a combination of attitude and behaviour in which dedication and involvement reflect the attitudes, whereas vigour and absorption mirror the physical contribution, and hence is visible in one's behaviour. There are not many practical examples of what is meant by the cognitive component of employee engagement, being merely defined as the "cognitive ability" (Macey & Schneider, 2008, p.17) "cognitive resources" (Saks, 2006, p.603) or "cognitive input" (Sun & Bunchapattanasakda, 2018, p.70) used in work performance to reach organisational goals.

Macey & Schneider (2008) state that the term engagement is often used to refer to a psychological state, trait, and behaviours, and their antecedents and outcomes. Instead of proposing any specific fixed definition of engagement as paramount, they instead have proposed that there are three components of engagement: (a) psychological state engagement, (b) behavioural engagement, and (c) trait engagement (See TABLE 3). The authors define trait engagement as a way of experiencing the world in a certain way (e.g., with affectivity, enthusiasm) which then mirrors psychological state engagement, which is followed by behavioural engagement. Psychological state engagement is an antecedent of behavioural engagement; for example, the feeling of vigour is a psychological state which can be followed by engagement behaviour, if it is combined with other positive affective states (Macey & Schneider, 2008). In addition to one's personal features, employee engagement is affected by factors such as work attributes and leadership.

TABLE 3 Three types of employee engagement (Macey & Schneider, 2008, p.6).

Trait Engagement	State Engagement	Behavioral Engagement
Positive views of life and work	*Feelings of energy, absorption*	*Extra-role behavior*
Proactive Personality	Satisfaction (Affective)	Organizational Citizenship Behavior (OCB)
Autotelic Personality	Involvement	Proactive/Personal Initiative
Trait Positive Affect	Commitment	Role Expansion
Conscientiousness	Empowerment	Adaptive

Engagement as a psychological state is about employees' feelings of energy and absorption, attachment, and/or enthusiasm. State engagement is often measured regarding job satisfaction, organisational commitment, psychological empowerment, and job involvement (Macey & Schneider, 2008, p.5), although

concepts such has organisational commitment, job satisfaction and job involvement are distinct concepts comparing to engagement, which has more complicated and profound aspect on employees relationship with work (Maslach, Schaufeli, & Leiter, 2001). Also, Erickson (2005, as cited in Macey & Schneider, 2008) stated that engagement is more than merely "satisfaction with the employment arrangement or basic loyalty to the employer". Instead, it is about passion and commitment and willingness to invest in yourself and support the employer's success. Macey & Schneider (2008, p.10) propose that one aspect of state engagement is the feelings of empowerment which imply connection to action and feelings of "self-efficacy and control and impact from one's action". Authors also argue that state engagement refers to "the perceived importance of work outcomes" (Macey & Schneider, 2008, p.13). Also, Kollmus & Agyeman (2010, pp.255–256) refers to "locus of control" and states that if a person has a strong feeling of control and believes his ability to bring change, his more likely to behave environmentally friendly, as he believes that his actions matter. These latter statements are noteworthy as they imply that engagement is linked to one's feelings of capability and belief in one's impact, which are central motivating factors also when it comes to environmental work.

Macey & Schneiders´ (2008) definition of engagement – as something closely related to the feelings of self-efficacy – is similar to the definition of environmental awareness by Harju-Autti (2011), who has stated that environmental awareness includes motivational components which entail concerns regarding environmental problems, and the impression of one's responsibility and ability to influence (and the will to act).

Employee engagement is not a momentary state but more a long-lasting and overall emotional and cognitional state (Saks, 2006; Schaufeli, Salanova, González-romá, & Bakker, 2002). According to Schaufeli et al. (2002, p. 74), engagement is "a positive, fulfilling, work-related state of mind" which has features of vigour, dedication, and absorption. In their definition, vigour entails the willingness to invest efforts in one's work, and dedication refers to the sense of significance and enthusiasm, among other things. Whereas with absorption, the authors refer to the mindset of "flow", in which employee is fully focused on one's work.

Also, Bakker (2011, as cited in Sun & Bunchapattanasakda, 2018, p.65) defines engagement as "a positively highly awakened emotional state with two features: energy, and involvement". Maslach et al. (2001, p.416) ads efficacy, stating that engagement is featured with energy, involvement, and efficacy.

Macey and Schneider (2008) state that employee engagement is visible behaviour which is something special and extra done by the employee. Engagement shows as innovative, initiative, and proactive behaviour, which goes beyond what is typically expected. Some authors (See, e.g., Campbell 1990; Erickson, 2005; Towers-Perrin 2003; all cited in Macey and Schneider 2008) refer to employee engagement also in the cases of extra effort. Macey and Schneider (2008) define engagement behaviour as adaptive behaviour which aims to either protect the organisation from threats and, if needed, promote the needed change. Foremost,

an engaged employee is focused on reaching organisational goals. Macey's and Schneiders definitions are easily applied into cases of assessing employee's engagement with environmental work, as in the successful implementation of environmental work, employee's proactive behaviour and innovativeness and initiative are central. Also, in implementing EMSs and in general in environmental work, two of the basic principles are promoting continuous improvement and change.

Macey and Schneider (2008) state that trait engagement is about the employee's personality characteristics and tendencies. For example, a proactive personality tends to impact ones working environment. Autotelic personalities are open to new challenges, relentless and more easily engaged in one's work. Personal tendencies, such as conscientiousness and proactiveness, support engagement. Also, the authors have identified that the tendency to experience work in a positive way, being adaptive and putting effort to initiate change to reach organisational goals will all promote engagement.

Despite various studies, there is not a commonly accepted definition of employee engagement. Regardless, it is commonly accepted in the academic literature that engagement includes cognitive, emotional, and behavioural components which are linked with individual role performance (See, e.g. Saks, 2006, p.602). Hence employee engagement is also defined and handled similarly in this research, as having cognitive, emotional, and behavioural components.

2.4.2 Interconnections of the key concepts

According to the literature review, none of the studied key concepts (environmental attitudes, environmental awareness, and employee engagement) has one clear definition. Although there is an abundance of studies on environmental attitudes and awareness and even employee engagement, there is a lack of studies assessing employee engagement with environmental work, which is also referred to as environmental employee engagement (See UNEP 2011). Nevertheless, the studied concepts have similar features and, according to the literature review, can be also similarly construct, having cognitive, emotional and behavioural components. In addition, the key concepts are in many ways interconnected (See FIGURE 3).

Attitudes are seen as central parts of environmental awareness, and they define the way information regarding the environment is interpreted and responded (Harju-Autti, 2011; Suopajärvi et al., 2016), and hence impact on the development of environmental awareness.

Whereas Suopajärvi et al. (2016) and Owens and Driffill (2008) state that increased awareness can lead to attitudinal change, Owens and Driffill (2008), however, emphasise that there is no straightforward causal relation as attitudes are also affected by multiple other factors, such as social, political, and cultural factors. Also, employee engagement includes attitudinal elements as it is defined to indicate, for example, involvement (Macey & Schneider, 2008) and dedication (Sun & Bunchapattanasakda, 2018). According to Erwin (2005) and Stangor et al.

(2014), in general, attitudes guide our behaviour in social situations and helps us to decide which actions to take or to avoid. Thus, it can be concluded that attitudes impact both environmental awareness and behaviour and the level of employee engagement.

Kollmus and Agyeman (2002) have argued that cognitive limitations to understand environmental degradation severely endanger emotional engagement and willingness to act. Thus, the authors emphasise the crucial role of environmental awareness and emotions and how promoting environmental awareness and fruitful environmental attitudes can be essential when there is a need to improve employees' engagement with environmental work. Similarly, Albelda Pérez et al. (2007, p.405) have raised in their study that training and awareness building might enhance employee's environmental knowledge and skills and boost employees' involvement with environmental management. Also, Pesonen et al. (2005) have stated that communication and training play a central part in promoting environmental awareness and employee engagement with environmental work. It can be concluded that environmental awareness is one important factor impacting the employee engagement with environmental work. On the other hand, the study by Geethalakshmi & Rodrigues (2017) has implications that engaged employees have a desire for continuous learning. Also, Partanen et al. (1999) propose in their environmental awareness development model that the growing concern over threats creates motivation for improved knowledge in individuals. Therefore, it can be concluded that engaged employee has a will to improve one's environmental awareness, which in turn promotes one's engagement. Hence, environmental awareness and employee engagement have a *synergic relationship*.
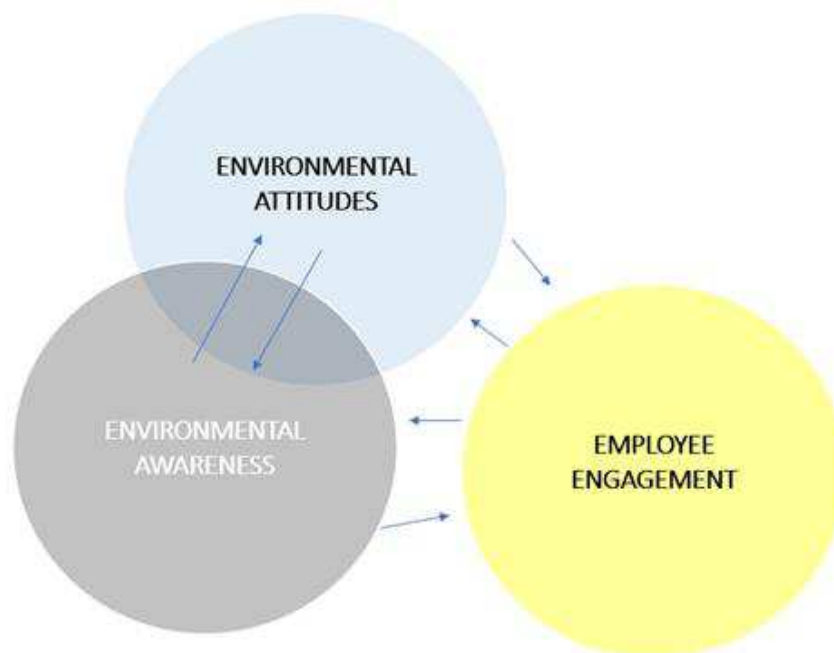

FIGURE 3 The interconnections of the key concepts – environmental attitudes, awareness and employee engagement.

2.4.3 Measuring employee engagement

As there are various definitions of the concept of engagement in the literature, there is also a great variation in what is measured in different engagement studies (Robertson-Smith & Markwick, 2009, p.43). There are available measurement tools for assessing engagement, for example, regarding organisational citizenship, commitment and the employees aligning with organisational values (See, e.g., Robertson-Smith & Markwick, 2009), but not readily made tools for assessing directly employee's engagement concerning organisations environmental work.

For example, state engagement is often measured regarding job satisfaction, organisational commitment, psychological empowerment, and job involvement (Macey & Schneider, 2008, p.5), although concepts such as organisational commitment, job satisfaction, and job involvement are distinct concepts comparing to engagement, which has more complicated and profound aspect on employees relationship with work (Maslach et al., 2001). Also, some features or outcomes of engagement are especially challenging to measure. For example, as stated previously, some authors (See, e.g., Campbell 1990; Erickson, 2005; Towers-Perrin 2003; all cited in Macey and Schneider 2008) refer to employee engagement also in the cases of extra effort, although merely an effort is challenging to measure.

To conclude, there is not readily made models for direct measurement of employee engagement with environmental work, but it is usually measured by making environmental awareness or attitude assessments, as in this research. In addition, the assessment of employee engagement is confirmed by making a theory-based content analysis to the data sets by choosing key indicators (based on the literature review) which best illustrate employee engagement with environmental work. The method is described in detail in chapter 3.3.

3   RESEARCH METHODOLOGY

The research task and purpose determine the strategic and methodological choices. The choice of methodology is hence determined, for example, depending on what kind of data is needed and from whom. Different research strategies offer their own limitations on the methodological choices made. The purpose of research can be defined by stating four traits, being either exploratory, descriptive, explanatory or predictive (Hirsjärvi, Remes, & Sajavaara, 2009, p.138).

The purpose of this research is to study how employee engagement with environmental work develop while building EMS; therefore the study is exploratory by nature, which means it studies what is happening to the phenomenon under study. In addition, the research aims to answer the questions, how engagement develops over time; therefore, the research is also having features of descriptive research (Hirsjärvi et al., 2009). As this research aims to study the development of employee engagement with environmental work in a specific company, Muovilami, by conducting both a questionnaire and interviews, the study is following the research strategy of a case study and mixed method research in which both qualitative and quantitative methods are used. As data will also be collected before and after building the EMS, the study is defined as a longitudinal case study using mixed methods.

3.1   Case study

A case study is commonly used in multiple science disciplines and in the field of economics (Yin, 2009, p.4). According to Hirsjärvi et al. (2009, pp.134–135), a case study is one of the traditional research strategies and stands for detailed, intensive information concerning a single case, small group or community. Typically, in a case study, one individual case, situation or group of cases is chosen under research. Case studies can also focus on multiple cases (collective case study) in which multiple cases are selected under the study to describe the phenomenon (Creswell & Poth, 2017). The focus is often on processes, and single cases are researched vis-à-vis environment (in a natural environment). The information is often gathered using multiple methods, such as observation, interviews or using documents. The goal is often to describe a phenomenon (Hirsjärvi et al., 2009). Laine, Bamberg & Jokinen (2007, p.9) highlight that actually, all empirical research is about investigating cases, but in a case study, research "case" is acknowledged differently as, for example, in quantitative research, in which case is a statistic unit (Laine et al., 2007, p.9). In all, case studies can be used to understand complex social phenomena such as small group behaviour, organisational and managerial processes (Yin, 2009, p.4).

Case studies qualify well for answering questions such as "how" and "why" as they often investigate phenomenon's which are complex, but also long ongoing (Laine et al., 2007, p.10). The pioneering qualitative case study researcher Robert E. Stake (1995, as cited in Eriksson and Koistinen 2014) has emphasised that one of the most important questions to raise when conducting a case study is: "what can we learn from the case"? According to Yin (2009, p.4), the more the chosen research questions seek to explain some present circumstance and extensive and in-depth description of some social phenomenon is needed, the more a case study will be the relevant research strategy choice. Laine et al. (2007, p.31) have illustrated this by stating that the fundamental purpose of a case study is to make the case understandable. To conclude, in a case study, the essence is on describing, understanding and interpreting a complex social phenomena (Laine et al., 2007; Yin, 2009).

There are multiple types of case studies, and there is variation in how different types are distinguished. Eriksson and Koistinen (2014) identify at least six typical case study types: descriptive, explanatory, exploratory, intrinsic, intensive and extensive case study. As this study aims to explain and describe how things develop, it fulfils the definition of explanatory case study, which goal, according to the authors, is to research, among other things, processes, their phases and relations between events.

Laine et al. (2007) have determined seven different types of case studies, in which the longitudinal case study is the most consistent with the features of my study. In a longitudinal case study, the same case is studied at least within two different eras, and the goal is to define how certain conditions or phenomenon develop over time. It is crucial to choose the periods so that the possible change is noticeable (Eriksson & Koistinen, 2014; Laine et al., 2007). The challenge lies in the fact that naturally also the case and the context is changing over time. That is why the research perspective should be chosen in a way that makes it possible to study the development of both (Laine et al., 2007).

Yin emphasises (2009) that it is possible that during the research, the case turns out to be different than it was first thought because often, the specific case study type is clarified during the research process. Yin continues that it is nevertheless important to bounder already in the early phases of the planning, what type of a case study researcher has at hand in order to minimise the chances of misrepresentation and enable the best access to case study evidence.

In a case study, one characteristic feature is the participation of the researcher, but according to the methodology guides, for a case study, it is typical that the researcher has only little control over the situation and the processes regarding the research target (Eriksson & Koistinen, 2014). My study fulfils many of the typical features of a case study: a) how questions are being central, b) there are not many empirical studies on the research tasks, and c) the research target is a phenomenon in the current time which we want to be described. Nevertheless, the criteria for low control is left unfilled. Although the technical side of building the EMS is excluded from the scope of the study, my practical aim is to enhance

the employee engagement simultaneously as building the EMS; therefore, I will be naturally in close contact and collaboration with the employees. This gives the study some typical features of an action research. When in a conventional case study, the data is collected by the researcher as a bystander without actively participating or affecting the actions of the research target; however, in action research, the researcher participates actively and simultaneously observes and evaluates the research target (Lehtonen, 2007). Andrew Townsend (2013) discusses the many roles a researcher can take in action research. Townsend provides a summarised version of the continuum and implications of positionality described originally by Herr and Anderson (2003). Townsend illustrates how the role of the researcher can be anything from insider to outsider and vary from being an individual researcher inside or outside the organisation or by doing a collaboration with the other researcher(s) inside or outside the organisation. The description fulfilling my study's features is the role of "outsider in collaboration with insiders". In this role, the researcher is one of the outsiders whose goals are to accomplish something with and on behalf of the insiders. This is usually the role of, for example, consultancies or change agencies and is also related to organisational learning and, therefore, fits well to the features of the study at hand, as my positioning can be seen as consult, aiming to develop the company's environmental management together with the employees and top management.

Although there are various interpretations and definitions of an action research, they all include the common concern of achieving some sort of a change, varying in its scope and nature: everything from individual to collective, even societal change (Townsend, 2013, p. 76) Also, Heikkinen (2015, in Valli & Aaltola 2015) states that action research is actually not a research method but an approach in which practical development is connected with research making. Therefore, action research entails a double mission, which aims to simultaneously create and research change. This latter characteristic of change-making is not so much present in my research as the main goal in the study is to describe the phenomenon, the possible change of the employee engagement, and answering the "how" questions, instead of bringing solutions or change. On the other hand, it is evident that the first round of data collecting revealed what the starting point of the employee's attitudes and awareness regarding environmental issues and environmental work is, and this data brought valuable information which was utilised when cooperating with the employees and when building the EMS. The aim was to use this material to support the best possible employee engagement with the EMS and its goals. To conclude, it can be said that the two research strategies, case study and action research, are interlinked in my study – although having most of the characteristics of a qualitative case study, as my study is more about describing a phenomenon, instead of driven by the interest of investigating how things could be better as in action research.

A case study approach effects also on the way target groups are chosen. As in general, in qualitative research, the target groups can be chosen in an expedient manner, not randomly (Hirsjärvi et al., 2009), and there is not a demand for a

randomly selected target group. Instead, the target groups are chosen according to representativeness, uniqueness, or theoretical interest depending on the research. As Muovilami is a small-sized company with small top management and 40 employees, it was seen as suitable to concentrate on the employees rather than on top management; the target group, therefore, being the 40 employees of the company. The research tasks are answered by conducting first a questionnaire which was targeted to all employees, and in the final stages of the building process, semi-structured interviews were conducted by choosing a representative sample of all the employees.

In a case study research, the cases are handled as unique. The material is contextual and time- and place-specific, and therefore results cannot be directly generalised (Hirsjärvi et al., 2009; Laine et al., 2007), and that is why generalisation in case studies has been a subject of debate for years (Laine et al., 2007). Some researchers see generalisation as nearly impossible (Lincoln and Guba 2000 cited by Laine et al., 2007) as others claim it might be possible in certain terms and conditions (Yin 2003; Stake 1995; Feagin 1993, all cited in Laine et al, 2007, p.28).

There have been identified two possible types of generalisation in case studies. Firstly, generalisation in a traditional sense in which the results and conclusions of a study are broadened outside the case (e.g. applied to other cases) or in which the generalisation is made inside the single case, for example, to conclude what can be stated of the case itself. The need and possibilities of generalisation are depended on how well the study has been succeeded in choosing the case, determining the target and accomplished methodologically (Laine et al., 2007, pp. 27, 31).

Laine et al. (2007, p.28) have proposed that instead of aiming for generalisation of information, case studies could offer profound descriptions of a single case and enable testing whether the conclusions retrieved in the specific case also hold in another case and context, and hence provide valuable information. Also, Saaranen-Kauppinen & Puusniekka (2006) have noted that although the aim of a case study is not firstly the generalisation of information, it is regardless relevant to consider whether the results could be applicable elsewhere; for example, in offering valuable information about the research process itself. Yin 2014 (as cited in Eriksson & Koistinen, 2014, p. 38) instead propose that rather than pursuing a statistical generalisation, the aim in a case study might be analytic generalisation which means that the theoretical concepts and models should be tested to explain new cases. Simply put, a case study can be used to challenge or promote the already proposed or developed theoretical views and concept systems, and hence can be utilised to explain and understand a broader set of cases (Yin 2014, as cited in Eriksson & Koistinen, 2014, p. 38; Robert K. Yin 2003, as cited in Laine et al. 2007, p.29).

The usability of the results and information can be enforced by representing a thorough description of the data and its analysis in the case study. The possibility to generalised and more reliable results can be enforced by choosing an

adequate amount of data, methods and perspectives which offer a sufficient picture of the case and enable reliable conclusions (Laine et al., 2007, p.27). This can be done by using mixed methods and triangulation, such as methodological or data triangulation (Eriksson & Koistinen, 2014).

Also, in this study, the reliability has been enforced by combining both qualitative and quantitative research methods, also called triangulation. According to Hair et al. (2015), there are four types of triangulation: researcher, data, theory and method. The method triangulation is about conducting the research project using several different methods and comparing the findings, including sometimes findings from both qualitative and quantitative approaches.

In mixed method research, it is typical that the research proceeds as an iterative and cyclic process and can begin from either data collection or theory, depending on what best suits the research purposes. During the research process, the researcher goes back and forth with the process to check, specify and add more discourse between the theory and empirical data and between the data sets (Eriksson & Koistinen, 2014, p.10, 22). Also, in this research, the process has been typical for a mixed method research, as the study has truly been an iterative process and required checking, altering the research plan, adding data analysing methods and increasing the discourse between the theory and empirical data whilst proceeding in the research process (See FIGURE 4).

According to Johnson, Onwuegbuzie & Turner (2007), the goal of mixed methods is to create a fuller picture and reach a deeper understanding of the described phenomenon. Simply put, triangulation in research means combining different methods, researchers, data sources and theories. Therefore, triangulation is about using multiple perspectives and combining multiple different methods and approaches. The different research methods used by researchers can enable that there can be simultaneously controversial research results regarding the same phenomenon. This way, triangulation can increase the credibility of the research (Tuomi & Sarajärvi, 2018).

Vilkka (2015) has stated that the main aim of triangulation is to enhance the coverage of research and decrease reliability issues, but it has its downsides: mixed method research is demanding as it requires skills from the researcher to connect results which are retrieved from using multiple methods into interpretations and conclusions.

To conclude, using mixed data sourcing methods and triangulation of methods in this research enables comprehensive and more profound data and resource-wise process. Using both data and methods triangulation ensures more congruent results and prevents results from being too dependent on one methodology.
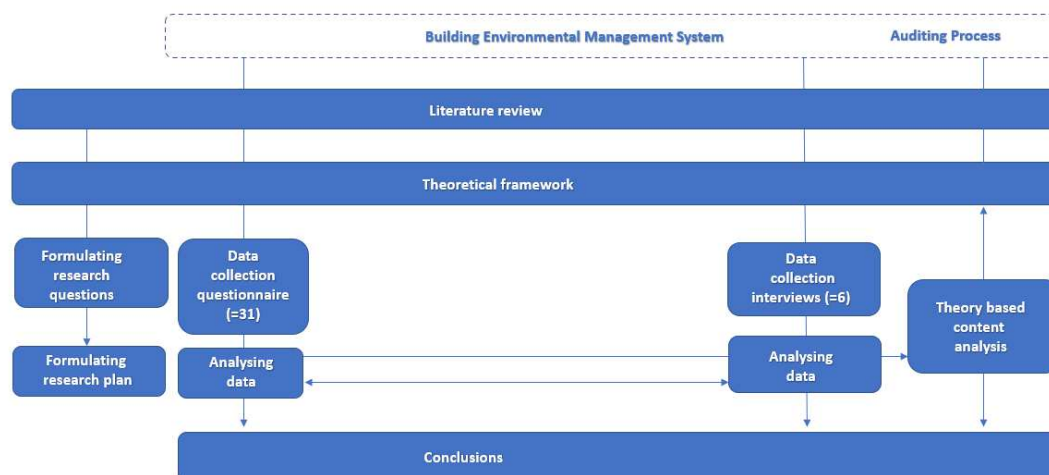
FIGURE 4 The research process.

3.2   Data collection methods

This study is based on collecting data by conducting an employee questionnaire in September 2019 before starting to build the EMS and interviewing six employees after the EMS was finalised in February 2020. According to Hirsjärvi et al. (2009), the selection of data collection method should be well justified, and therefore selecting a questionnaire and interviews as methods to collect data is contemplated and justified in the following chapters.

Previous surveys were utilised when formulating the structure and questions in the questionnaire and interviews, such as studies by Raatevaara (2017), Heikkinen (2009), Hirvonen and Vanhatalo (2018) and Hämäläinen (2006). Raatevaara (2017) research discussed students' environmental awareness and attitudes regarding sustainability-themed school project. Heikkinen (2009) has conducted a profound survey on employees' awareness at Skanska. Also, the vast survey on citizens´ environmental awareness by Hirvonen and Vanhatalo (2018) in Helsinki and Vantaa area was utilised when making the data collection. Hämäläinen (2006) has conducted a study on employee attitudes regarding environmental management and building Ecostart environmental management system.

As stated previously in chapter 2.2.2., none of the presented definitions or assessment scales of environmental attitudes offer a suitable instrument for the research, as the aim is to study employees' attitudes in a general level, but also regarding environmental work. Nevertheless, the scales most suitable for answering the research tasks were chosen and applied. The most relevant scales to study employee's general environmental attitudes was chosen from the EAI scales by Milfont & Duckitt (2010). Hence following scales were chosen a) what

are employee's attitudes regarding environmental conservation (scale 4.), b) attitudes regarding the fragility of environment (scale 6.), c) what is their personal conservation behaviour (scale 8.), d) what are their beliefs regarding human utilisation of nature (scale 10.), and e) what is their level of environmental concern (scale 11.) Also, similarly to NEP scale by Dunlap et al. (2000) employees' expressions of environmental concern, such as beliefs, attitudes, intentions and behaviours, were examined.

As the aim was to study general environmental attitudes and awareness and in addition also attitudes and awareness regarding the case company's environmental work, only some of the statements were chosen from the different perspectives of EAI and NEP, in order to avoid a too long set of questions. Also, it has to be noted that NEP scale is lacking some relevant perspectives which are present in the EAI, such as the perspective of respondents' personal conservation behaviour and the readiness to actively support environmental protection. Also, the NEP scale does not assess the respondent's beliefs about whether economic growth and development should have priority rather than environmental protection. The latter assess, for example, how the respondent feels about conversation policies regulating the industry or about alternative eco-friendly practices. These are rather relevant perspectives when assessing employee attitudes in a business environment, and, hence, also included in the survey.

In addition, the ISO 14001:2015 standard sets requirements regarding employee's environmental awareness. Therefore, both questionnaire and interviews entail questions asking specific questions which assess employee's awareness regarding a) environmental policy, b) the significant environmental perspectives and impacts of one's work, and c) one's personal possibilities to increase the impact of EMS.

3.2.1 Questionnaire

Surveys are considered as an efficient method to collect a broad set of information, but they also have their downsides (Hirsjärvi et al., 2009). Although being efficient in gathering information from multiple people at once, surveys are being criticised for offering too superficial information. In this research, a survey targeted to all employees was nevertheless seen as an expedient method to handle the first round of data collection, as the aim was to have the first screening and to gain an overall view about employee's environmental attitudes and awareness, such as how worried they are of environmental issues and how aware they are of the current environmental work. Firstly, the goal was to acquire statistical information to enable assessment of whether there, in general, is fruitful ground for employee engagement with environmental work. Overall, it would have been a heavy process to interview all the employees before and after building the EMS, as there is in total 40 employees in the case company. Therefore, starting with a survey was a reasonable and resource-wise decision.

The downside of a survey is, however, that a person might misunderstood questions or give false answers to act socially favourable manner or give false

answers merely due to negligence. Also, surveys tend to have challenges in getting enough respondents (Hirsjärvi et al., 2009). In this study, there was the risk that the employees are not aware of the terms or concepts regarding, for example, environmental management mentioned in the survey, and this might lead to false results. These risks and challenges were tackled by avoiding difficult terms in the survey as much as possible. Also, the best possible respondent rate was enabled by organising a meeting in which all the employees were able to use their working time to answer the questionnaire. This also gave the possibility for employees to ask questions if something was unclear with the questionnaire. To avoid the risk of respondents being forced to answer against their genuine attitudes and opinions, the questionnaire was returned as anonym.

On the other hand, research tasks could have also been answered by making only questionnaires for all the employees before and after. As there was a need to describe the issue in a thorough manner, it was seen that through questionnaires, the results would have stayed at a fairly superficial level considering the research topic. Hence the second round of data collection was carried out by conducting interviews.

The questions in the questionnaire were categorised so that there are questions concerning environmental awareness at a general level and related to the environmental work of the organisation. Similarly, there were questions assessing the environmental attitudes at a general level and questions related to attitudes regarding the environmental work (incl. environmental management and EMS). The questions were assessing the employee's environmental awareness and attitudes from multiple perspectives, such as regarding awareness on general environmental issues and environmental management, but also about the worries and their feelings regarding the possibilities they have to influence on environmental issues.

The questionnaire was conducted by using Webpropol 3.0 and was conducted in September 2019. The questionnaire was open for answers from the 18th until 30 of September. Most of the employees answered the survey in one organised meeting, in which the employees were given the time to answer the survey on paper. There were in total 40 employees at Muovilami, and 31 answered the questionnaire; therefore the response rate of the questionnaire was fairly good, 77 per cent. The questionnaire forms are seen in the Appendix 1 (English version) and Appendix 2 (Finnish version).

3.2.2 Interviews

Interviewing is a very flexible data collection method and is therefore suitable for many research purposes. It is also the main data collection method in qualitative research (Hirsjärvi & Hurme, 2000; Hirsjärvi et al., 2009) and often used also in case studies (Hirsjärvi et al., 2009).

Interviewing can nevertheless be a highly time-consuming method to collect information. Planning of interviews, contacting the interviewees, scheduling

and analysing the materials makes interviewing a rather slow process. In addition, interviewing is not considered to be reliable from multiple perspectives due to both interviewer and interviewee. The interviewee can, for example, be attempted to answer in a socially favourable manner which leads to false research results. Also, analysing, interpreting and reporting non-structured interview materials is problematic as there are no ready-made models to be found (Hirsjärvi & Hurme, 2000).

On the other hand, interviewing is a suitable method choice because it allows straight interaction with the research target (Hirsjärvi et al., 2009). This was needed in my study as it was clear that the discussed theme might not be so familiar for all the interviewee. Hence it was important that interviewing enabled asking more questions from the interviewee and allowed the person interviewed to comment if something was not clear. Also, the advantage of interviewing is that the interviewer can better motivate employees to answer questions, whereas in questionnaires, this would not be so easy. The material acquired from interviews can also offer more descriptive examples regarding the research issues, which can be valuable when aiming to describe phenomenon (Hirsjärvi & Hurme, 2000, p.35), comparing to questionnaires.

According to Hirsjärvi et al. (2009), there are multiple types of research interviews. Often the types are determined depending on how structured and formal the interview situation is, changing, for example, from structured interview, where questions are based on a questioner sheet and therefore asked in similar order and manner from all interviewee, into a non-structured informal interview where the interviewer only has a certain topic or theme in mind, but otherwise the conversation can flow freely regarding the topic.

The most suitable interview type for this research was a themed semi-structured interview which is something in between a structured and non-structured interview and does not have a strict definition. The main defining feature is that the interview is focused only on certain topics or themes (Hirsjärvi et al., 2009). According to Robson (1995, as cited in Hirsjärvi et al., 2009), it is typical for semi-structured interviews that some aspects are beforehand fixed, but others are decided while doing the interview. To conclude, depending on the view, a semi-structured interview can mean that the questions are fixed beforehand, but the interviewee are free to answer in their own words, or that the questions are fixed beforehand and similar for all interviewee, but the interviewer can alter the order of presenting the questions, or it can even mean altering the precise form of the questions (Hirsjärvi & Hurme, 2000).

The target group for interviews was a sample of the 40 employees at Muovilami. Purposeful sampling was used as it was meant to choose the most presentative people to give information. Therefore, six employees were asked to be interviewed. In order to get the most describing answers and best possible coverage of employee perspective, it was chosen to interview employees from both office and factory but having an emphasis on the employees at the factory as they encounter more environmental issues in their daily work comparing to

office workers. Therefore, it was chosen four people from the factory and two from the office for an interview. Also, the interviewee chosen from the factory included two employees who had closely participated in the building of the EMS and were, therefore, a relevant choice. The themes and questions of the interviews were beforehand fixed, but the order of the questions was changed depending on the interviewee.

The last data collection was conducted by doing six semi-structured interviews in February 2020. The interviews were held face-to-face at the head office of Muovilami in Ähtäri. The interview structure and the themes are presented in APPENDIX 3. Each interview took approximately half an hour.

3.3 Data analysis

There were four different data analysing methods used to assess the development of employee's environmental attitudes, awareness, and engagement (See TABLE 4).

TABLE 4 Data analysing methods.

Data	Analysing methods
Questionnaire data	Descriptive statistics analysis
	Cross-examination between variables
Interview data	Thematic analysis
	Theory-based content analysis

Concerning the results of the questionnaire, the data was analysed by using traditional quantitative methods. As mentioned previously, the role of the first round of data collection was to create an understanding of the starting point of employees' environmental awareness and attitudes. Therefore, the goal was not to do an in-depth analysis from the questionnaire data but rather gain an overall view of employee's environmental attitudes and the level of environmental awareness. The questionnaire data was analysed by using descriptive statistical analysing methods. The three central characteristics of single variables such as the distribution, central tendency, dispersion were analysed. In addition to looking into individual variables and their values, a cross-examination between some of the variables was made. Also, some comparison between different variables were made to see possible inconsistencies in the questionnaire results. The aim of the analysis was to describe the questionnaire data set and its distribution. The goal was to identify the most salient issues raising from the results, such as what are the attitudes and the level of awareness of the majority, but also to identify issues raising most difference in opinion.

Data from the themed interview can be analysed according to the original themes used while interviewing, but the researcher can also create new themes in the analysing phase, based on the empirical data, if necessary (Saaranen-Kauppinen & Puusniekka, 2006). A typical way of conducting a content analysis is to classify, cluster and look for similarities and differences in the data (Tuomi & Sarajärvi 2002 as cited in Saaranen-Kauppinen and Puusiniekka, 2006). Hence after all the interviews were recorded, transcribed and later on wrote into a Word document, the data from the interviews were first analysed according to the beforehand set themes (general environmental awareness and attitudes; the influence of EMS on environmental awareness; the influence of EMS on environmental attitudes and behaviour; the development of environmental attitudes, awareness, and engagement). The transcripts were read several times, and in some parts, listened again to the recorded tapes to make sure nothing was left out from the transcripts. As going through the transcripts, similarities and differences in the separate interviews were searched.

Conventional content analysis is inductive reasoning in which the data is clustered, classified and coded into a form that is easier to handle and analyse. Salo (in Aaltonen, & Högbacka, 2015) argues that for some, the content analysis seems like an easy magic trick to draw conclusions, although coding is not yet the presentation of results but merely data organised for making conclusions from. Besides this, there are also other issues such as the challenge of interpretations and objectivity in what is chosen under analysis. Salo (in Aaltonen, & Högbacka, 2015) emphasises that one of the main solutions to tackle these challenges is to ensure integration of theory into making content analysis. Therefore, in addition to making the analysis merely according to the beforehand set themes, the reliability of research was enforced by taking a more theory-based approach into the data analyse. Ruusuvuori et al., 2010 (as cited by Salo, 2015 in Aaltonen & Högbacka) have said that the main purpose of content analysis is to find something new, such as new classifications and conceptualizations. In this research the goal was to reach a better linkage between theory and empirical data and to go beyond the measurement of environmental attitudes and awareness and ensure a thorough assessment of employee engagement. This was done by choosing central indicators (concepts) of employee engagement according to the literature review conducted, and hereafter searching implications of these from the empirical data sets. Hence the content analysis entailed deductive reasoning in which theory and concepts were the starting point from which the empirical data was analysed. The purpose of theory-based data analysis is to find support for the data interpretations from theory and to gain enforcement or explanation (Saaranen-Kauppinen & Puusniekka, 2006; Tuomi & Sarajärvi 2002 as cited by Salo, 2015).

In theory-based content analysis, the categories are determined based on the previous knowledge, and the data sets are scanned for equivalent descriptions of these. The analysis is started by first making (based on the literature review conducted) a frame of concept (Tuomi & Sarajärvi, 2018). Because it was

already recognised that employee engagement could be either attitudinal, cognitional or behavioural, these were chosen as the upper-level concepts. This was seen important as concepts should represent engagement from a variety of perspectives, including attitudinal, behavioural and cognitional engagement types, as it was seen from the literature review that in the key concepts (environmental attitudes, awareness and employee engagement) this three-component model is visible and hence this multidimensionality of key concept should be taken into account. Below these upper-level concepts, a set of key concepts were chosen, which could best indicate employee engagement with environmental work. Especially indicators that best illustrate the outcomes of engagement was seen the most relevant. According to the literature review conducted, the most central key concept implicating employee engagement with environmental work would be "dedication", "feelings of empowerment", "supporting change", "role expansion", and "willingness to learn". These concepts were chosen as they were repeatedly visible in the literature review but can also be seen as key properties in employees when implementing environmental work in an organisation. In addition, it was seen that also employees' environmental concerns would be one central concept that can indicate engagement with environmental work. Although it is not said that increased environmental concerns evidently lead to stronger engagement with environmental work, it has been stated that environmental concerns can be seen as an important driver for employee engagement (See e.g. Harju-Autti 2011, p.8).

After choosing the key concepts, the data sets (questionnaire and interviews) were again analysed in order to search for implications of these key concepts. The process of analysing the interview dataset was rather iterative, as definitions and descriptions of the key concepts were studied multiple times and compared to the content of the transcripts and searched possible implications of employee engagement. The results from the concept analysis were then organised into a table (see chapter 4). As the research is longitudinal, in parallel to this theory-based content analysis, also comparison between the two data sets was made to assess how and if the attitudes and awareness have changed and possible developed.

4   RESULTS

4.1   Environmental attitudes indicating employee engagement

According to the first round of data collection, the questionnaire, employees' general environmental attitudes seemed, in most parts, fruitful ground for engaging with environmental work (See TABLE 5). Respondents' environmental attitudes were assessed by making both positive and negative attitude statements.

TABLE 5 Employees' general environmental attitudes.
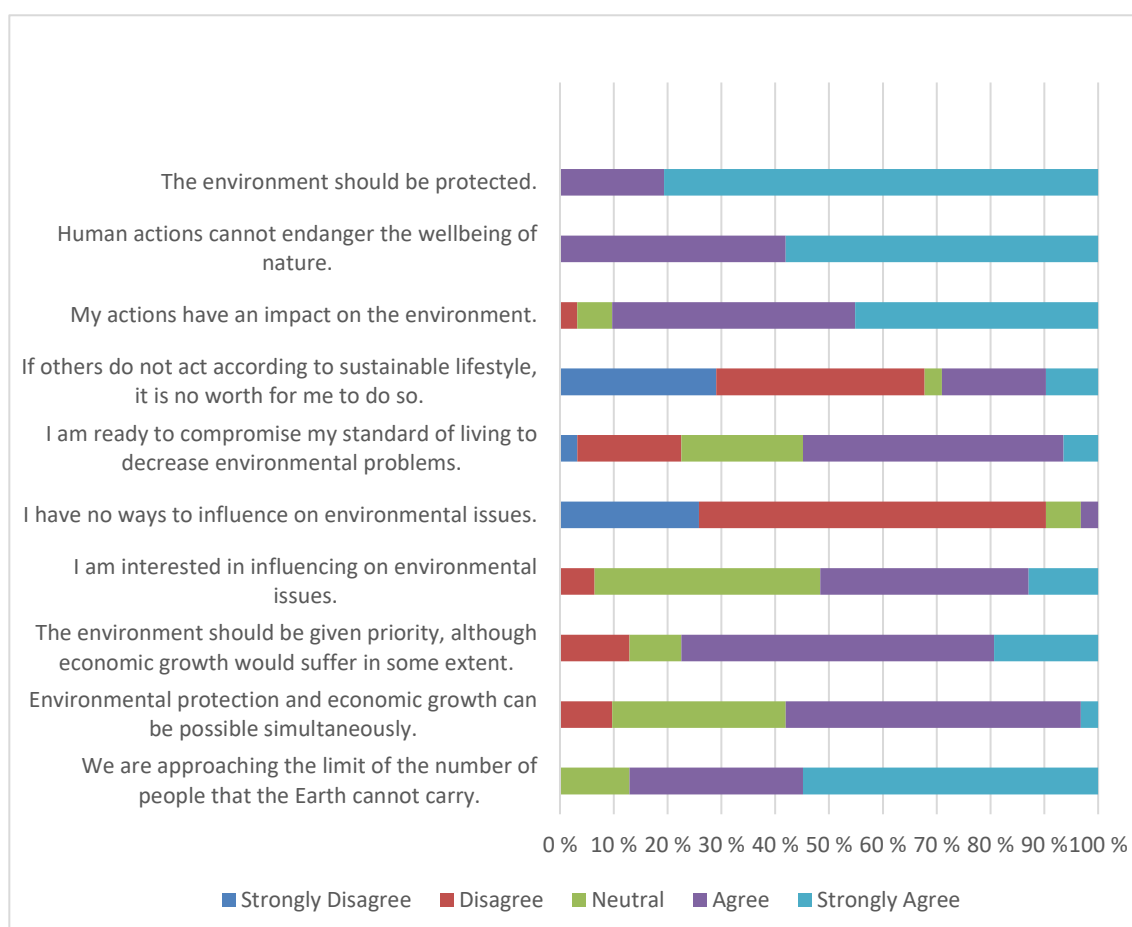
All respondents (n=31) agreed that the environment should be protected, and human actions should not endanger the wellbeing of nature. The majority acknowledged their impact on the environment. These all being rather positive attitudes when it comes to engaging yourself with environmental work.

The strongest deviation (1,36, See TABLE 6) in the answers was concerning one's willingness to a sustainable lifestyle. Regardless, the majority (68%) felt that it is worth acting according to a sustainable lifestyle, although others would not

do the same. Another statement that had a higher deviation, was the question regarding the willingness to sacrifice (0,98) which also indicates possible attitudes-action gap: despite the rather positive environmental attitudes otherwise, only slightly over half (55%) of the respondents were willing to compromise their standard of living to decrease environmental problems.

There were also other results that reflected fruitful attitudes regarding environmental work as a clear majority (59% agreed, 19% strongly agreed) of the respondents stated that the environment should be given priority although economic growth would suffer to some extent. Also, the slight majority agreed that environmental protection and economic growth could be possible simultaneously. Nevertheless, the share in agreed and strongly agreed answers (55% agreed, as strongly agreed merely 3%) gives implications that the respondents were not feeling so strongly on the possibility of simultaneous actualisation of conservation and economic growth.

TABLE 6 Employees' general environmental attitudes. Average and standard deviation.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average	Standard Deviation
The environment should be protected.	0,0 %	0,0 %	0,0 %	19,3 %	80,7 %	4.8	0.40
Human actions cannot endanger the wellbeing of nature.	0,0 %	0,0 %	0,0 %	41,9 %	58,1 %	4.6	0.50
My actions have an impact on the environment.	0,0 %	3,2 %	6,4 %	45,2 %	45,2 %	4.3	0.75
If others do not act according to sustainable lifestyle, it is no worth for me to do so.	29,0 %	38,7 %	3,2 %	19,3 %	9,7 %	2.4	1,36
I am ready to compromise my standard of living to decrease environmental problems.	3,2 %	19,3 %	22,6 %	48,4 %	6,4 %	3.3	0.98
I have no ways to influence on environmental issues.	25,8 %	64,5 %	6,4 %	3,2 %	0,0 %	1.9	0.67
I am interested in influencing on environmental issues.	0,0 %	6,4 %	41,9 %	38,7 %	12,9 %	3.6	0.81
The environment should be given priority, although economic growth would suffer in some extent.	0,0 %	12,9 %	9,7 %	58,1 %	19,4 %	3.8	0.90
Environmental protection and economic growth can be possible simultaneously.	0,0 %	9,7 %	32,3 %	54,8 %	3,2 %	3.5	0.72
We are approaching the limit of the number of people that the Earth cannot carry.	0,0 %	0,0 %	12,9 %	32,3 %	54,8 %	4.4	0.72

As stated previously Schaufeli et al. (2002, p. 74), has described employee engagement as a "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption", in which dedication is characterised, among other things, as a sense of significance and enthusiasm. The feeling of enthusiasm referred to by Schaufeli et al. (2002) is closely linked to the concept of "willingness to learn" which is later discussed. It is therefore proposed that employees' *dedication and sense of significance* regarding environmental protection can be seen as an indicator of employees' attitudinal engagement with environmental work and can be assessed through evaluating employees' attitudes regarding environmental protection. In the questionnaire, only slightly over half (52%) were interested in influencing environmental issues, and a rather large

share (42%) gave a neutral answer to the statement. This indicates that respondents were not so sure about their willingness to influence environmental issues.

In the final stages of building the EMS, a sample of employees were interviewed. Almost all interviewee (5 from 6) considered environmental issues as important, at least to some extent. Similarly, to the questionnaire results, everyone thought that the environment should be protected. Almost all interviewees were interested in issues concerning environmental protection and stated that they try to act accordingly in their daily life. For the interviewees, environmentally friendly behaviour in daily life was mostly about recycling waste responsibly, but not yet showing in other significant ways.

[Environmental issues] are important for me - in some ways, and the little what I´m able to affect, I will. Nor I am not an environmental activist or anything, but I do try to think these issues a little, stated one interviewee.

The majority of the interviewees stated that the building of the EMS has increased, to some extent, interest regarding environmental issues.

[Environmental issues] are not so important for me but it has gotten more and more interesting… and I have started to investigate these issues more, commented another interviewee. Hereby reflecting a growing interest towards environmental issues.

Only two of the interviewees assessed that their attitudes regarding the environment have not changed by any means. Thus, the results indicate that there has been some positive development in the attitudes and the perceived importance of environmental issues and protection – these all indicating development in attitudinal engagement.

See TABLE 7 for the summary of the results regarding the theory-based content analysis and the analysis concerning the development of environmental employee engagement. As explained in the chapter 3.3., the development of employee engagement was assessed by choosing six key concepts (based on the literature review conducted), which were most suitable to illustrate employee engagement with environmental work. To ensure thorough perspective, the key concepts were chosen to represent different types of engagement: attitudinal, behavioural and cognitional engagement. The data sets were then scanned to search for indications of these key concepts. The content of the table is further explained in the following chapters.

TABLE 7 The development of environmental employee engagement.

Type of engagement	Key concept	Description of engagement	Implications of engagement	Development of environmental employee engagement
Attitudinal engagement	Dedication (sense of significance)	Dedication is characterized among other things as a sense of significance and enthusiasm. Schaufeli et al. (2002, p. 74.)	According to the questionnaire results, only slightly over half (52%) of the respondents were interested in influencing on environmental issues, whereas almost all interviewee considered environmental issues and protections as important, at least in some extent and wanted to influence on environmental issues.	yes, some development
	Feelings of empowerment	One aspect of state engagement is the feelings of empowerment which imply connection to action and feelings of "self-efficacy and control and impact from one's action". Macey & Schneider (2008, p.10)	There is indications of empowerment among employees caused by the EMS building process, but simultaneously indications of lack of feelings of empowerment and possibilities to influence.	controversial results
	Supporting change	Engaged employee is being supportive of the organisation's goals and values. Robertson-Smith and Marwick (2009, p. 5)	According to the questionnaire results, majority thought merely fulfilling the legal requirements is enough for the company to do its share, but in the interviews majority considered the new environmental program and its goals important.	yes, significant development
Cognitional engagement	Willingness to learn	Engaged employee have a desire for continuous learning. Geethalakshmi & Rodrigues (2017)	Majority of the interviewees stated that building the EMS has increased - in some extent - interest regarding environmental issues. They would like to receive more information about the environmental impacts and were interested in participating into environmental trainings.	yes, some development
	Environmental concerns	Environmental concerns can be seen as sort of driver for increased awareness and engagement towards environmental work , as according to Harju-Autti (2011, p.8) the growing concern creates motivation for improved knowledge. Hence concerns can acts as a driving force, which activates the person to act in a certain way.	According to the results the employees' environmental concerns have stayed the same level through the process of building EMS. The employees were similarly concerned in both data sets: rather concerned about environmental issues, and especially concerned about global environmental issues such as climate change, and less about the state of the environment in Finland.	no significant development
Behavioral engagement	Role expansion	Employee engagement is visible behavior which is something special and extra done by the employee. In addition, some authors refer to employee engagement also in the cases of extra effort. Macey and Schneider (2008)	According to both data sets, majority was rather similarly willing to put more effort in environmental responsibility – at least in some extent - although it would increase their workload.	no significant development

One aspect of state engagement is the *feelings of empowerment* which imply a connection to action and feelings of "self-efficacy and control and impact from one's action" (Macey & Schneider, 2008, p.10). Hence engagement is depended on the feeling, whether your actions matter. This is central as self-efficacy, and the belief in one's own actions are also central motivating factors in environmental work, and, therefore, implications of these are taken under scrutiny in the data analysis. The majority (circa 90%) of the respondents in the questionnaire agreed or strongly agreed that their actions have an impact on the environment and felt they have ways to influence environmental issues, implicating feelings of self-efficacy. But - which is controversial - only slightly over half (52%) of the respondents were interested in influencing environmental issues. Hence, they recognise their impact on the environment but, on a practical level, were not necessarily ready to act. This indication of attitudes-action gap was not so visible anymore in the interview results. But the interview results do indicate a lack of feelings of empowerment and possibilities to influence, as the majority (4 from 6) of the interviewed noted that there are challenges in finding new means to decrease the harmful impacts of one's own daily work. Some interviewed noted that the manufacturing processes are already rather optimised with the current technic and

there are challenges finding improvements. Two interviewees commented that in their process phase the most significant environmental aspects are related to the generation of waste which is considered challenging to decrease as it is caused by incoming plastic packaging or machining waste from CNC equipment. On the other hand, a third of the interviewees were empowered by the new information regarding their own environmental impacts and had started to take environmental issues more into account to decrease them. Few interviewees also stated that they have been noticing some development in the attitudes as employees have started to think about environmental impacts of their actions more often, and there is slightly more discussion regarding environmental issues among employees, for example regarding the environmental aspects and impacts of Muovilami.

It can be concluded that there are rather controversial results regarding the feelings of empowerment, as there is some positive development in the feelings of empowerment when comparing the results of the questionnaire and interviews, but simultaneously indications of lack of feelings of empowerment and possibilities to influence on environmental issues whilst interviewing the employees.

TABLE 8 Employees' attitudes toward environmental work (n=31).
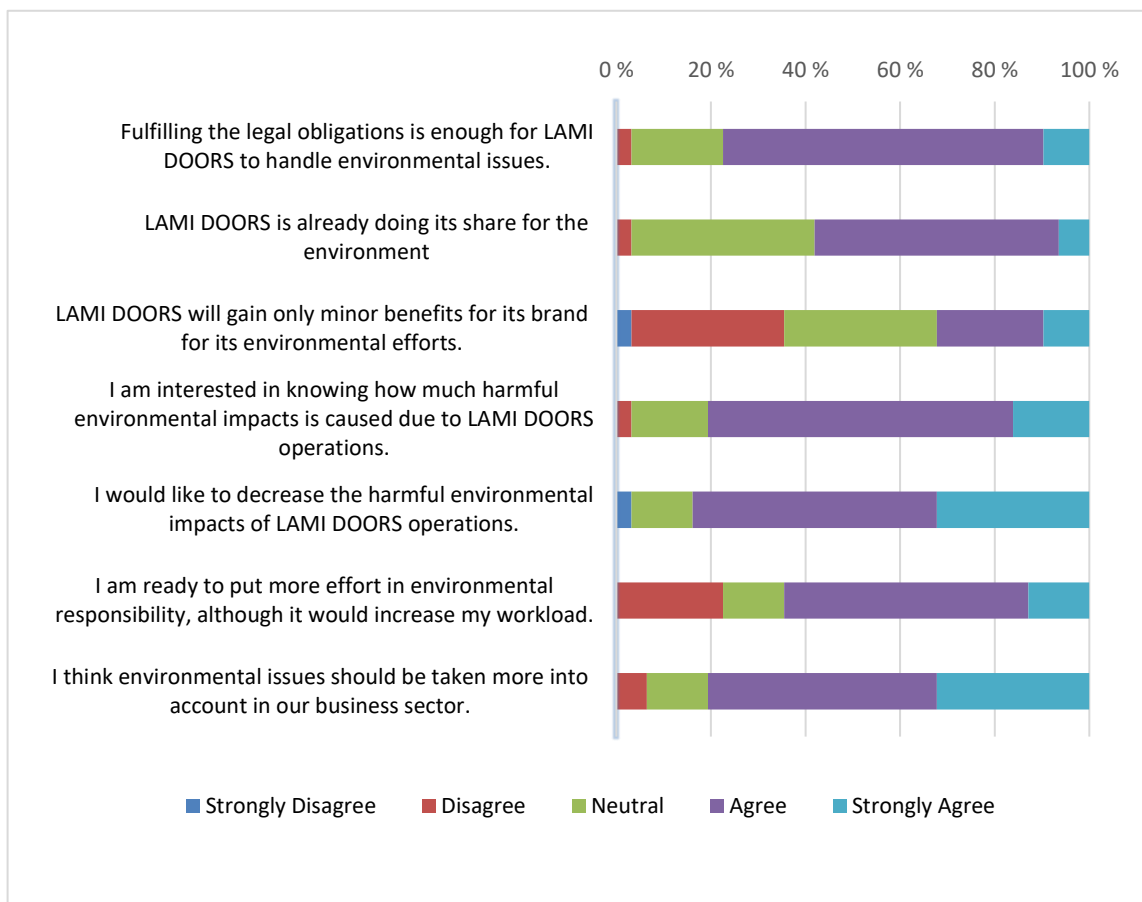
Robertson-Smith and Marwick state that (2009, p. 5) engaged employee is being *supportive of organisation's goals and values (Supporting change).* As environmental work is above all about change, this supportive feature is central to look upon when looking at indications of employee engagement from the data sets. Respondents 'attitudes regarding the company's environmental work were in some parts controversial as we look into the questionnaire results. The majority felt that fulfilling the legal obligations is already enough for Muovilami to handle environmental issues, and Muovilami is already doing its share for the environment. It's also noticeable that in the statements assessing employees' attitudes regarding environmental work, the share between agree and strongly agree answers, the agree answers are prominent, indicating less strong attitudes. (See TABLE 8). Nevertheless, quite a big share of the respondents was interested in knowing more about the environmental impacts and interested in decreasing the harmful impacts. In addition, many agreed that environmental issues should be considered more in the business sector of Muovilami. To conclude, it seems that in the organisational level, the respondents seemed to think Muovilami is already doing enough for the environment, but on the other hand, respondents might be ready to put more effort into environmental issues on a personal level. Whereas in the interviews, all had a positive attitude regarding the environmental work and believed that the company would merely benefit from it. All interviewees considered the new environmental program and its goals important. Few commented that environmental responsibility is such a growing trend, and therefore the implementation of the EMS is a good decision. The interviewees were hoping the EMS will bring business benefits, in the form of increased material efficiency, in addition to supporting marketing and selling, especially in international business in convincing customers for being an environmentally responsible company. The interviewees did not see any downsides for the EMS. Nevertheless, one interviewee mentioned that the possible hindrance would be if the management system becomes "too heavy to handle in their daily work", meaning that EMS should not increase too much current job burden.

It's extremely good, that we have now set [environmental] goals…this is the right direction, that we are on the move, said one interviewee. Showing positive attitude towards environmental work.

It can be stated that comparing to the questionnaire, the attitudes regarding environmental work have therefore changed significantly towards more supportive as the majority of the respondents in the questionnaire felt that merely fulfilling the legal obligations would have been enough for the company to "do its share" whereas the interviewees felt that the current level of company's environmental work (with having the EMS) is sufficient to handle environmental issues. In addition, almost all noted that there are always some things that could be improved and emphasised that the current goals should be updated and renewed at some point. Hereby acknowledging the core principle of EMS and continuous improvement – and change. To conclude, employee's attitudinal engagement with environmental work has in some part developed. The most significant

change was concerning the level of support regarding environmental work. Also, there is some development in the sense of significance regarding environmental issues. Whereas the results are controversial regarding the development of feelings of empowerment.

According to Macey and Schneider (2008), employee engagement is visible behaviour which is something *special and extra done by the employee (role expansion).* According to the questionnaire results, the majority (agreed 52%, strongly agreed 13%) of the respondents were willing to put more effort into environmental responsibility – at least to some extent – although it would increase their workload. Thus, they had the motivation for higher-level performance. In the interviews, some commented that they have only limited working hours, but in principle, the majority was also willing to work more for the environment.

After training I started to pay attention into un-necessary use of lightning and printing and planned new routines to decrease them, stated an office worker, whilst interviewed. Also, one interviewee commented that shortly after the first training employees reminded also each other's to avoid un-necessary use of light.

Despite the somewhat visible attitudes-action gap in the questionnaire results, it can be said that the willingness to put more effort into environmental responsibility has stayed rather same level during the EMS building process**,** as in both questionnaire and interviewee, the majority would be interested in putting more effort into environmental responsibility. Also, similarly in both data sets, the majority was interested in knowing more about the environmental impacts and interested in decreasing the harmful impacts, which also indicates some level of willingness to put extra effort for the sake of the environment.

It can be concluded that the behavioural engagement with environmental work has stayed in somewhat same level during the EMS building process, if we investigate the development regarding employees' willingness to put more effort rather strictly visible behaviour. Instead, according to the interview results there was not yet evidence of significant visible extra role behaviour among employees or significant change in employee's behaviour, showing the change in engagement is more on the attitudinal level rather on behavioural level.

4.2   Environmental awareness indicating employee engagement

As stated previously, Harju-Autti (2011, p.8) defines environmental awareness as a combination of motivation, knowledge and skills, and argues that in environmental awareness, motivation is the driving force - the will, which activates the person to act in a certain way. Motivational component entails concern regarding environmental problems, the impression of one's responsibility and ability to influence, and last but least, the will to act. In addition, the author states that growing concern creates motivation for improved knowledge, and hence concerns can itself act as a driving force, which activates the person to act in a certain way.

Therefore, it can be concluded that *environmental concerns* can be seen as a sort of driver for increased awareness and engagement with environmental work.

According to the questionnaire results, respondents were rather concerned about environmental issues. They were most concerned about climate change and its harmful consequences, as 42% of the respondents answered that they are somewhat concerned and 32% extremely concerned about climate change. When asked about the concerns regarding the state of the Earth, 45% of the respondents were slightly concerned, 23% somewhat concerned and 33% of the respondents extremely concerned. Respondents were least concerned about the state of the environment in Finland, as the majority were either not concerned (13%) or slightly concerned (53%). Interviewees were at least somewhat concerned about the state of the environment, being most concerned about global environmental problems such as climate change, but not being so concerned about the state of the environment in Finland. Thus, according to the results, the level of employee's concerns has stayed the same level through the process of building EMS, as the employees were similarly concerned in both data sets: rather concerned about environmental issues, and especially concerned about global environmental issues such as climate change, and less about the state of the environment in Finland.

The argument that environmental concerns can act as a driver for engagement was enforced with the findings in this research while making a cross-examination regarding respondents' environmental concerns. The cross-examination included answers from respondents that had expressed to be extremely worried regarding at least one of the environmental issues listed in the questionnaire (climate change, state of the environment in Finland or in general the state of the Earth) comparing to those that were not at all worried about environmental issues (See TABLE 9). According to the results, the respondents that were extremely concerned agreed more strongly on the importance of environmental protection and that their actions do have an impact on the environment comparing to the not concerned. Those that were extremely concerned were also more willing to compromise their standard of living to decrease environmental problems. Extremely concerned also believed more strongly on their possibilities to impact on environmental issues and were clearly more interested in influencing on environmental issues comparing to the not concerned ones. They also agreed more often and more strongly that the environment should be given priority, although economic growth would suffer to some extent. Interestingly, none of the extremely concerned ones, "strongly agreed" to the statement that environmental protection and economic growth can be possible simultaneously; nevertheless, 77% agreed with the statement. The extremely concerned also all believed in the possibility of an eco-crisis regarding population growth. In addition, regarding environmental work, the extremely concerned had stronger attitudes, as they were clearly more willing to decrease the harmful impacts caused by Muovilami actions and putting extra effort although it would increase their workload.

TABLE 9 Cross-examination of respondent's answers regarding environmental concerns. Extremely Concerned (n=13) and Not Concerned (n=4).

	1.Strongly Disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	Average	Median
1. The environment should be protected.							
Extremely concerned	0 %	0 %	0 %	0 %	100 %	5,00	5
Not concerned	0 %	0 %	0 %	50 %	50 %	4,50	4,5
2. Human actions cannot endanger the wellbeing of nature.							
Extremely concerned	0 %	0 %	0 %	23,08 %	76,92 %	4,77	5
Not concerned	0 %	0 %	0 %	50 %	50 %	4,50	4,5
3. My actions have an impact on the environment.							
Extremely concerned	0 %	0 %	7,69 %	46,16 %	46,15 %	4,38	4
Not concerned	0 %	25 %	0 %	50 %	25 %	3,75	4
4. If others do not act according to sustainable lifestyle, it is no worth for me to do so.							
Extremely concerned	53,85 %	15,38 %	0 %	23,08 %	7,69 %	2,15	1
Not concerned	0 %	75 %	0 %	25 %	0 %	2,50	2
5. I am ready to compromise my standard of living to decrease environmental problems.							
Extremely concerned	0 %	7,69 %	23,08 %	53,85 %	15,38 %	3,77	4
Not concerned	25 %	25 %	0 %	50 %	0 %	2,75	3
6. I have no ways to influence on environmental issues.							
Extremely concerned	38,46 %	53,85 %	7,69 %	0 %	0 %	1,69	2
Not concerned	25 %	75 %	0 %	0 %	0 %	1,75	2
7. I am interested in influencing on environmental issues.							
Extremely concerned	0 %	0 %	30,77 %	38,46 %	30,77 %	4,00	4
Not concerned	0 %	25 %	25 %	50 %	0 %	3,25	3,5
8.The environment should be given priority, although economic growth would suffer in some extent.							
Extremely concerned	0 %	0 %	7,69 %	53,85 %	38,46 %	4,31	4
Not concerned	0 %	25 %	0 %	75 %	0 %	3,50	4
9. Environmental protection and economic growth can be possible simultaneously.							
Extremely concerned	0 %	7,69 %	15,39 %	76,92 %	0 %	3,69	4
Not concerned	0 %	25 %	25 %	25 %	25 %	3,50	3,5
10. We are approaching the limit of the number of people that the Earth cannot carry.							
Extremely concerned	0 %	0 %	0 %	30,77 %	69,23 %	4,69	5
Not concerned	0 %	0 %	50 %	0 %	50 %	4,00	4

According to the results from the questionnaire, the respondent's environmental awareness was not on a high level when starting the process of building the EMS. Almost half (45%) of the respondents assessed that in general, they are only slightly aware of environmental issues or concepts such as environmental impacts or material efficiency. Nevertheless, they were more aware of the environmental impacts and environmental risks related to their work (See TABLE 10).

TABLE 10 Employees´ awareness regarding company's environmental work.
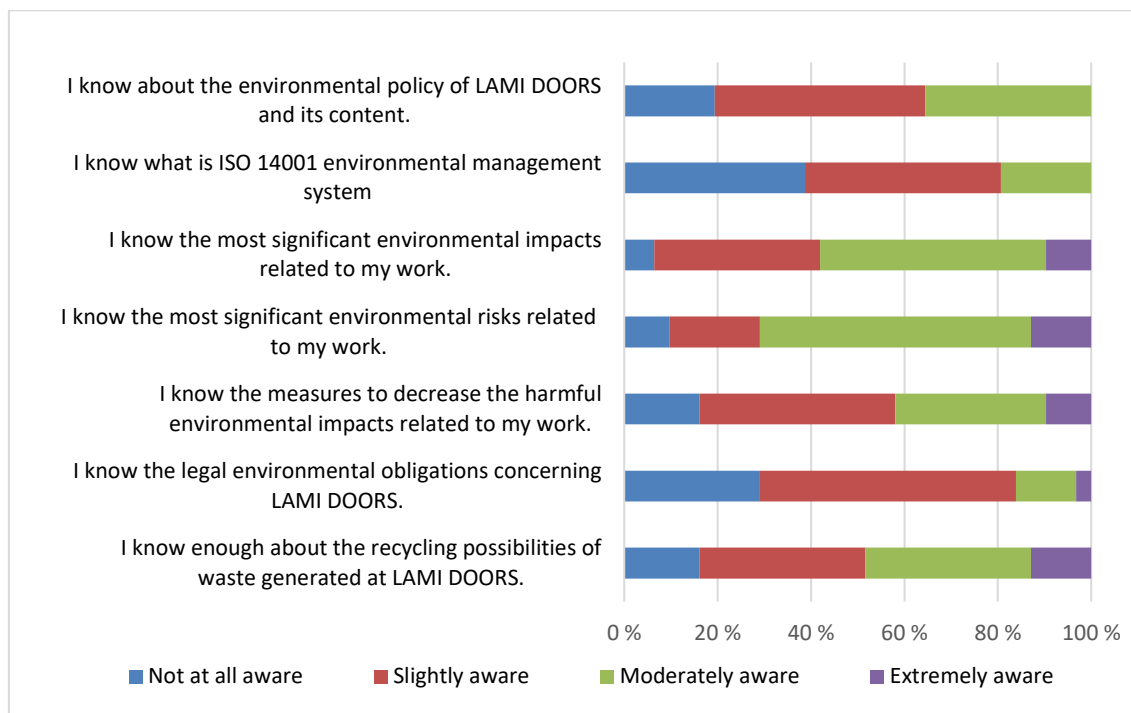
The respondents in the questionnaire knew less about the measures to decrease the harmful environmental impacts related to their work, as the majority (58%) stated that they either were only slightly aware (42%) or not at all aware (16%) of these measures. Respondents were least aware of the legal environmental obligations concerning Muovilami. Over half (55%) were only slightly aware, and almost a third (29%) were not at all aware of those. Nevertheless, the different job duties among the respondents need to be taken into account when assessing these latter results. As approximately half of the employees are working at the office, for them, environmental impacts and risks related to their work are naturally different in nature as for the employees working at the factory. In this sense, it might be that part of the unawareness can be due to the fact that for the office workers, the environmental impacts and risks are not so evident or relevant issues. As for the factory workers, environmental impacts are more relevant to comprehend, and risk management is part of the everyday procedures. Regardless, the result also reflects the lack of environmental awareness of some of the respondents in the starting point of the research.

According to the interview results, employees' awareness regarding the environmental work has increased to some extent during the process of building the EMS. The interviewees stated that they have gotten new information regarding environmental policy, but five out of six interviewees stated that they had received information rather little concerning these. Five out of six interviewees stated that they have learned more about ISO 14001 but added that not much.

Half of the interviewees felt they have gotten more information about the environmental impacts of the company's actions and also new information regarding the most significant environmental impacts of their own work. According to the questionnaire results, 38% did not recognize they encounter environmental issues in their daily work. Environmental issues were also linked merely to waste disposal and such, whereas in the interviews environmental issues were understood more broadly, and besides mentioning waste as central environmental issues interviewees mentioned also issues such as decreasing travelling through online meetings and stated the importance of optimized material efficiency when designing new solutions for the company and how reusing the doors decreases material losses.

The interviewee stated that they did not receive any significant new knowledge regarding environmental risks or legal obligation regarding their own work. But as stated, also in these results evaluating the change in awareness might be reflected the differing nature of work duties between the office and factory workers. Hence, it can be concluded that according to the results, environmental awareness of the employees has increased to some extent.

As stated previously, training and awareness building can promote employee's environmental knowledge and skills and strengthen their involvement with environmental management (Albelda Pérez et al. 2007). Also, Geethalakshmi & Rodrigues (2017) study imply that engaged employees have a desire for continuous learning. Also, it is generally acknowledged that training and sharing information should be utilised in engaging employees in environmental work (See, e.g., Pesonen et al., 2005). Encouraging employees to continuous learning is seen as one important tool to boost employee engagement in general but enabling employees continuous learning is also essential in fulfilling the requirement of continuous improvement in implementing EMS. Thus, I have proposed that one key indicator of employee engagement with environmental work is the employee's *willingness to learn* more regarding environmental issues and environmental work.

The majority (80%) of the respondents in the questionnaire and interviewee were interested in knowing more about the environmental impacts and participating in environmental training. Most interviewees noted that they are specifically interested in the environmental impacts of their own work; hence training should give practical and concrete information specifically regarding one's own tasks. But in addition, the majority of the interviewees stated that building the EMS has increased – in some extent – interest regarding environmental issues. Hence, both questionnaire results and interviews indicate a willingness to learn and, therefore, positive cognitional engagement with environmental work. Regarding employees' environmental concerns, there is no significant change, but a willingness to learn has increased to some extent. Hence it can be concluded that there is some positive development regarding employee's cognitional engagement with environmental work.

5 CONCLUSION AND DISCUSSION

The goal of this study was to investigate how employees' environmental attitudes and awareness develop while building an EMS and analyse how development of employees' environmental attitudes and awareness indicate development of engagement with environmental work.

Employee's engagement with environmental work was assessed by conducting an environmental attitude and awareness questionnaire before the EMS was build and conducting interviews in the final stages of the building process. In addition, engagement was measured by using theory-based content analysis, which was carried out through scanning the datasets by using key indicators regarding employee engagement applicable to environmental work. To ensure thorough perspective, the key concepts were chosen to represent different types of engagement: attitudinal, behavioural and cognitional engagement. Hence, the research is defined as a case study carried out as a longitudinal study, using mixed method research.

According to the results, employee's *attitudinal engagement* with environmental work has developed in some parts, as there is an indication of development of employees perceived importance of environmental work (sense of significance) and significant increase in the level of support towards environmental work (supporting change). On the other hand, the results were controversial regarding employees feeling of empowerment and the feelings of efficacy as there were both indications of empowerment and the lack of it.

The most significant change was in the level of support regarding environmental work, which changed significantly towards more supportive. The majority of the respondents in the questionnaire felt that merely fulfilling the legal obligations is enough for the company to "do its share", whereas six months later, all interviewees considered the new environmental program and its goals important. In addition, many commented that there is always room for improvement, and the current goals should be renewed at some point.

The majority of the interviewees stated that building the EMS has increased – to some extent – interest regarding environmental issues. They would like to receive more information about the environmental impacts and were interested in participating in environmental training. Hence, there is some indications of development in *cognitional engagement.*

Some of the interviewees felt that the building of the EMS has caused a sort of environmental awakening and has increased the awareness and willingness to decrease the harmful environmental impacts of the company's actions and especially of their own personal actions. Regarding the level of environmental concern (which can be categorised as attitudinal/cognitional engagement type), there was no considerable change nor indications of an increase in engagement,

as employees' environmental concerns have stayed at the same level through the process of building EMS.

There was no significant change in the employees' *behavioural engagement* (role expansion) either, as, in both questionnaire and interviewee, the majority was interested in putting more effort into environmental responsibility. Hence the willingness to put more effort into environmental responsibility has stayed somewhat at the same level during the EMS building process.

The results were in some parts similar to other environmental attitude studies in which respondents' environmental attitudes were rather positive, but when asked opinion regarding one's own environmental behaviour or willingness to act, a stronger deviation was visible (See, e.g., Koskela, M., 2008). Similarly, to the results by Jäntti (2014), although the employees' respond to EMS and environmental issues were positive, the system had not yet affected significantly to the working methods of employees. This is rather understandable in this case study as the EMS was not yet effectively executed but in its early stages. Also, similarly to a study by Jäntti (2014), there was stronger agreement on individual's responsibility regarding environmental impacts, but when asked about the willingness to impact on environmental issues, more neutral answers were given during the first data collection. The results were nevertheless more positive compared to the study by Hämäläinen (2006) in which results showed that although environmental issues were seen as important, the employees were not so willing to change their working methods in practice for the environment. In my study this indication of attitudes-action gap was not so visible as in both questionnaire and interviewees, the majority would be interested in putting more effort into environmental responsibility and decreasing the harmful impacts.

Hämäläinen (2006) raises the importance of organisational culture in supporting environmental behaviour. Also, offering employees experience of being able to influence and involve themselves in organisations environmental issues are stated as important ways to engage employees with EMS and creating real greening of the organisation. This latter is consistent with the concept of feelings of empowerment and self-efficacy by Macey and Schneider (2008).

The majority of the interviewees stated that the building of the EMS has increased – to some extent – interest regarding environmental issues, and only two of the interviewees assessed that their environmental attitudes have not changed by any means. Hence, it can be stated that the impact of EMS on employee attitudes has been stronger compared to the study by Tofferi & Kuitunen (2012), in which a significant share assessed that the Green Office had not affected their personal environmental attitudes.

According to the interview results, employees' awareness regarding environmental work has increased only to some extent during the process of building the EMS, but not on a large scale. Similar challenges regarding environmental awareness building have been raised in the studies by Hämäläinen (2006), Jäntti (2014), Nummela (2003) and Tofferi & Kuitunen (2012) as, according to all these

studies, more communication and training would have been needed to improve employee's awareness regarding environmental issues and EMS.

In this study, the EMS building was in its early stages, and only one training session had been conducted before the interviews. That is why the emphasis was more on assessing the employee's willingness to learn, which was identified as one indicator of cognitional engagement. As stated, the majority (80%) of the respondents in the questionnaire and interviewee were interested in knowing more about the environmental impacts and participating in environmental training. The willingness to learn was far lower in the study by Hämäläinen (2006), in which only half of the interviewee was interested in participating to environmental training. Training and communication have been seen as important ways to engage employees with environmental work. Also, according to Nummela (2003), training is one of the most important ways to engage employees with change in an organisation, and there is a clear correlation between training and positive attitudes regarding EMS.

The results imply that enforcing environmental awareness is a key factor in enabling engagement. That is why it is fruitful that the case study results show that there is seen strong willingness to learn among employees. Also, according to the results, EMS and environmental work is mainly seen in a positive light, and the benefits are recognized, which also imply positive ground for employee engagement with environmental work.

As there are indications of lack of feelings of empowerment and possibilities to influence on environmental issues, there is a crucial need to enforce the feelings of empowerment and efficacy and offer more possibilities to influence on environmental matters. This could be done, for example, by involving employees closer to designing the EMS or by clarifying in more detail the environmental impacts of employee's own work tasks and hence the possibilities to decrease the harmful impacts. Overall, training is central in enforcing the know-how of the employees, engaging and reaching the principle of continues improvement of EMS.

The results from making a cross-examination regarding respondents' environmental concerns and environmental attitudes support the statement by Harju-Autti (2011) that environmental concerns could be a driver for employee engagement. According to the cross-examination, the respondents who were extremely concerned were also more willing to compromise their standard of living to decrease environmental problems, believed more strongly in their possibilities to impact on environmental issues and were clearly more interested in influencing on environmental issues comparing to the not concerned ones. Also, in the study by Jäntti (2014), was seen a connection between a certain environmental concern and readiness to act to decrease it (e.g., energy used). Regardless, the author argues that the results are uncertain and offering employees ways to influence would be far more effective than enforcing general environmental awareness. Involving employees into EMS can enforce their feelings of influence, which

could then enforce willingness to act and pro-environmental behaviour. This research has similarities with the research approach by Potoski & Callery (2018), who have assessed the effects of peer communication programs on environmental employee engagement in the retail banking operation. The authors similarly concentrate on assessing the outcomes of engagement and dividing the investigated indicators into, similarly as in this research, into affective, cognitional and behavioural traits (See FIGURE 5). But the chosen indicators are drawn directly from specific survey questions, as in this research, they are drawn based on the theory-based content analysis and are the key properties in employees when implementing environmental work in an organisation. The chosen key indicators are mostly different, but the concept of participation in employee environmental programs in Potoski & Callery (2018) study is closely related to the concept of willingness to learn presented in this research. Interestingly in the study by Potoski & Callery (2018), it is seen as an indicator of behavioral engagement whereas in this research it is seen as an indicator of employee's cognitional engagement.

FIGURE 5 Dependent variable measures of environmental employee engagement by Potoski & Gallery (2018, p. 1489).

Engagement Traits	Construct	Survey Questions	Response Scale	
Affective Engagement	Pride	How proud are you of TD Bank's environmental efforts?	1	Very proud
			0	Somewhat proud
			−1	Not proud at all
	Commitment	Does being able to contribute to the environment while you're at work strengthen your commitment to the company?	1	Yes
			0	No
Cognitive Engagement	Awareness	Are you aware of the following TD Bank initiatives and awards?	1	Yes
		• TD Forests	0	No
		• Paper Reduction		
		• Energy Efficiency		
		• LEED certified/Net Zero		
		• Carbon Neutral		
	Confidence	How confident are you with discussing TD Bank's commitments/ achievements with the following groups of people?	2	Very confident
			1	Confident
		• Colleagues	0	Neutral
		• Customers	−1	Somewhat confident
		• Family & Friends	−2	Not confident
		• Community		
Behavioral Engagement	Participation	Please indicate your level of participation in the following:	3	I am a promoter
		• TD Green Nation	2	I am an active participant
		• Green Network	1	I am a member
		• TD Community Connections	0	I am aware
		• TD on TeamWOW!		

As the study by Potoski & Gallery (2018) focuses merely on the effect of peer communications on environmental employee engagement, it does not offer a suitable model for a more thorough assessment of the development of environmental employee engagement or possibilities for making a comparison between the results. Nevertheless, the study arouses many thoughts regarding the trustworthiness of environmental employee engagement studies and suggestions for future research, which is later discussed.

5.1   Assessment of trustworthiness

The validity and reliability of the study must be evaluated throughout the research process. As this research studied the development of employee´s engagement with environmental work in a specific company by conducting both a questionnaire and semi-structured interviews, the study is a case study and mixed method research in which both qualitative and quantitative methods are used. In quantitative research, the assessment is rather straightforward to make, but for qualitative research, there is no similar agreement on the best strategies nor criteria. In qualitative research, the trustworthiness can be addressed in multiple ways. The focus and chosen validation strategies are depended on the research and, e.g., the researcher's philosophical orientation (Creswell & Poth, 2017). Especially the assessment of mixed method research trustworthiness is seen as rather demanding (Creswell & Plano Clark, 2011; Onwuegbuzie & Johnson, 2006, both cited in Sormunen, Saaranen, Tossavainen & Turunen, 2014) because of the integration of different research data and research settings (Onwuegbuzie & Johnson, 2006 cited in Sormunen et al., 2014). Regardless of the challenges, the validity and reliability (and more largely the trustworthiness) are assessed as thorough as possible on both quantitative and qualitative basis.

In quantitative research, the validity assesses how well the chosen research method measures what it is supposed to measure. Reliability assesses the consistency of the analysis and the replicability of the measurements (Tuomi & Sarajärvi, 2018). In this research, it was chosen to conduct an environmental awareness and attitude survey. The aim was to have the first screening and to gain an overall view about employee's environmental attitudes and awareness. The validity of the survey was enforced by making a thorough search on similar surveys and gather the most suitable questions to be asked. Also, the aim was to avoid too professional terms or other terms that would be easily misunderstood. Also, the survey was given for comments to my supervisors and top management beforehand to ensure the best possible form. The majority of the employees answered the questionnaire in an organized meeting in which all the employees were able to use their working time to answer the questionnaire. This also gave the possibility for employees to ask questions if something was unclear with the questionnaire. To avoid the risk of respondents being forced to answer against their genuine attitudes and opinions, the questionnaire was returned as anonym. Regardless there is always the possibility of misunderstanding the questions. The response rate of the questionnaire was fairly good, 77 per cent, which is rather representative sample of the employee's attitudes and awareness. The survey questions and data analysis methods are described in detail; thus, the results could be, in theory, replicable. In practice, it might be that employees' opinions and attitudes have changed after time, and the results might be different. The concept of validity and reliability is seen to be in some parts applicable also to qualitative research. Reliability is assessed in multiple ways. The results should

not be random. This means that if two researcher conducts the same study, the results should be same. Validity measures whether the methods used really measure the things that it is supposed to measure (Hirsjärvi et al., 2009). In qualitative research, the reliability can be assessed, for example, by assessing whether the results are generalised or transferred into other objects and circumstances. When discussing the reliability of one's qualitative research, also the question of objectivity arises. Has the researcher succeeded in objective views when hearing and observing the research objects? In practice, it has been acknowledged as evident that the researcher's gender, age, background and other factors all impact on the way research is planned and conducted (Tuomi & Sarajärvi, 2018). Validity and reliability are argued to be inadequate to meet the needs of qualitative research assessment, whilst in many research guides, they have been replaced with other more suitable concepts (Tuomi & Sarajärvi, 2018). Lincoln & Cuba (1985 as cited in Creswell & Poth, 2017) use the term trustworthiness of qualitative study instead and propose concepts such as credibility, authenticity, transferability, dependability, and conformability (p.256). Similarly, Tuomi & Sarajärvi (2018) recommends using concepts such as credibility, transferability, dependability, and confirmability, especially when assessing the trustworthiness of qualitative research using content analysis, as in my study. Lincoln and Cuba (1985 as cited Creswell & Poth, 2017) argue that instead of reliability, the researchers should aim to dependability and conformability instead of objectivity. Both are reached through auditing of the research process. According to Creswell & Poth (2017), this auditor should not have any connection to the study, and his agenda would be to investigate findings, interpretations, conclusions and ensure that they support the data. In my study, this so-called auditing was merely done by my supervisors who followed the process of research making from the beginning till the end. Their comments and views were asked in all the critical phases of the research, such as when making the research plan, setting the research tasks, designing the research strategy and designing the survey and interviews, all the way to making the data analysis and conclusions. Creswell & Poth (2017) also raise the need for "peer review and debriefing sessions" as a part of the validation strategy. In my case, this would have been our thesis group which consisted of other thesis workers, and in which some had similar topics with me. Unfortunately, this thesis group work ended before finalisation of my own research process, but it gave support in the early phases.

According to Creswell & Poth (2017) the transferability is enabled by making thoroughly and detailed descriptions of the case or settings in the study to ensure other researchers can determine whether the research and its findings would be transferred into other settings. This transferability was ensured in my study by describing in detail the research process. The usability of the results and information has also been enforced by representing a thorough description of the data and its analysis in the case study. As described in chapter 3.1. regarding case studies, the possibility of generalisation is much debated (Laine et al., 2007) as the material is often contextual and time- and place-specific, and therefore direct

generalisation of results is not possible (Hirsjärvi et al., 2009; Laine et al., 2007). Regardless, two possible types of generalisation have been identified: generalisation in a traditional sense (the results and conclusions of a case study are broadened outside the case, e.g., applied to other cases) or the generalisation is made inside the single case, for example, to conclude what can be stated of the case itself. (Laine et al., 2007, pp. 27, 31). The possibility to generalised and more reliable results can be enforced by choosing an adequate amount of data, methods and perspectives which offer a sufficient picture of the case and enable reliable conclusions (Laine et al., 2007, p.27). In this study, the reliability has been enforced by combining both qualitative and quantitative research methods, also called triangulation. The different research methods used can enable simultaneously controversial research results, and this way, triangulation can also increase the credibility of the research (Tuomi & Sarajärvi, 2018). Similarly, to Yin 2014 (as cited in Eriksson & Koistinen, 2014, p. 38), it is proposed that the possibility in this research is an analytic generalisation which means that the proposed theoretical concepts and assessing models of employee engagement with environmental work should be further studied and tested to explain new cases.

Although Creswell & Poth (2017) do not stress the aim of objectivity in qualitative research, it has to be stated that, especially concerning the content-analysis, there were many subjective decisions made. There are always subjective views impacting when interpretations are made from qualitative data. Also, another researcher might have chosen different central key indicators of employee engagement which could have led to different kinds of results. For example, the study by Potoski & Gallery (2018) illustrates how there can be totally different choices of key indicators to choose regarding environmental employee engagement and therefore also different kinds of results and conclusions.

Hämäläinen (2006) has concluded that valuing environmental issues is nowadays a social norm, and thus environmental issues are stated as important regardless of the everyday practices or reality of individuals. Hereby assessing results regarding the development of environmental attitudes should be scrutinized with uncertainty. Similarly, some uncertainty reliability issues might be caused by the situation that the same person who built the EMS conducted the interviews face-to-face, which might lead to socially acceptable answers, such as more positive than negative answers regarding the EMS. On the other hand, the study by Raineri and Paillé (2016) raises the question of whether strong environmental attitudes are at all prerequisite for enforcing environmental employee engagement, as their study results showed controversially that organisations environmental policy was more likely to impact employee's environmental engagement when an employee had a weak personal ecological belief.

Creswell & Poth (2017) discusses "clarifying researchers bias or engaging in reflectivity" (p.261). Often this researchers positioning is left out of the reporting of the study, but in this study, it is explained in chapter 3.1. in order to enable the readers understanding of the researcher's role in the EMS building process and

the role as some kind of consultant, also it is discussed in evaluating the trustworthiness of the study as the researcher's central role in the building of the EMS might affect the answers of the interviewee.

Mixed method research is said to be more time consuming and challenging comparing to conventional research (Saaranen-Kauppinen & Puusniekka, 2006). In this study, the integration of research methods was done in the phase of data collection, data analysis and in making conclusions. Especially in data analysis, it was challenging to compare and draw conclusions from both quantitative and qualitative data sets. Also, it was challenging as there was no other longitudinal or mixed methods research done regarding environmental employee engagement which could have been used for comparison or as a support in research making.

As mentioned previously, in longitudinal studies, it is important to choose the periods so that the possible change is noticeable (Eriksson & Koistinen, 2014; Laine et al., 2007). This raises the question of whether the results of this study would have been totally different if the second data collection had been conducted later, for example, a year after establishing the EMS. Of course, the timing of the data collection was, in this case, forced as it was seen most suitable to conduct before ending my working period at the case company.

5.2   Suggestions for future research

When considering the urgency of many global sustainability challenges at hand (e.g., climate change, loss of biodiversity, chemicalisation), it has come clear that we all as individual consumers have a role, but also every organisation big and small should participate in tackling these challenges. For this, we need to motivate people to engage with environmental work no matter the sector. As employee engagement is seen as one key factor in enabling real greening of the organisation, we should have a clear definition of the construct of it and a simple, easily applicable model(s) for measuring and enforcing it.

Hence, there is a need for more research on the essence of environmental employee engagement and evaluation on which indicators would be most suitable for assessing the level of it. Also, the proposed key indicators (concepts) for assessing environmental employee engagement in this research should be re-tested, evaluated and, if needed, complemented with extra key indicators. Environmental work and its scope variates depending on the field in which the organisation operates. First, it would be crucial to create the universal model(s) for organisations to adopt. There are also interesting research areas regarding the emerging concept of GHRM, which was mostly left out of the scope of this research. Considering the crucial role of GHRM in engaging employees with environmental work, it would be useful to investigate the role, possibilities and challenges of HRM in the evaluation of environmental employee engagement.

There are also definitely interesting case study possibilities to map out organisations in which evaluation and hereafter enforcement of employee engagement have been done successfully from which then possible good practices could be drawn. Although this study did not focus on management's engagement with environmental work, the role of management should not be forgotten in enforcing environmental employee engagement. The support, well-aligned communication and good example of the top management are crucial in enabling employee engagement and achieving the targets of environmental work. Overall, it is crucial that the case company continues evaluating the level of its employee's engagement, recognises the possible challenges related to it and seeks ways to enforce environmental employee engagement. After all, as stated in the first pages of this master's thesis, employee support is central in driving businesses towards sustainability (UNEP 2011).

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JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

Dear respondent,

Muovilami is starting to build environmental management system (EMS) in compliance with the ISO 14001:2015 standard. EMS is a management system which main purpose is offering organizations a framework to protect the environment and mitigate the adverse environmental impacts of their operations. Successful implementation of EMS can bring many business benefits for companies such as improved competitiveness, risk management and corporate image.

Nevertheless, merely building the management system will not yet bring results. In addition, proper employee engagement and support with environmental work and its goals is required. Therefore, employees are in a key role when designing and maintaining the system. Hence, I will be concentrating on the employee perspective in my master thesis and studying, how the system building impacts employees environmental attitudes and awareness regarding environmental issues and especially regarding environmental work at Muovilami. This questionnaire is addressed for every employee at the company. In addition, a sample of employees is later chosen for a more in-depth interview as the system is finalized.

Your answer is both valuable information for the system building and also for my master's thesis. All given data will be handled confidentially and anonymous. The following questionnaire will require approximately 10 minutes to complete.

Please do not hesitate to raise questions and ideas regarding the EMS and my research.

In Ähtäri, September 17th 2019

Yours Sincerely,
Jenni Vainioranta
Jyväskylä University School of Business and Economics (JSBE)
Corporate Environmental Management
Email: jenni.j.vainioranta@student.jyu.fi
Phone number: 040 412 3847

Backround information

Age

○ Less than 30 years

○ 30-40 years

○ 41-50 years

○ over 50 years

Gender

○ Male

○ Female

I have been working for Muovilami Company for

○ Less than 2 years

○ 2-5 years

○ 6-8 years

○ 9-11 years

○ 12-14 years

○ 15 or more years

Questions concerning environmental attitudes

What are your attitudes redarding environmental protection? Please indicate your level of agreement with each of the following statements by marking (X).

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. The Environment should be protected	○	○	○	○	○
2. Human actions cannot endanger the wellbeing of nature.	○	○	○	○	○
3. My actions have an impact on the environment	○	○	○	○	○
4. If others do not act according to sustainable lifestyle, it is no worth for me to do so.	○	○	○	○	○
5. I am ready to compromise my standard of living to decrease environmental problems.	○	○	○	○	○
6. I have no ways to influence on environmental issues.	○	○	○	○	○
7. I am interested in influencing on environmental issues.	○	○	○	○	○
8. The environment should be given priority, although economic growth would suffer in some extent.	○	○	○	○	○
9. Environmental protection and economic growth can be possible simultaneously.	○	○	○	○	○
10. We are approaching the limit of the number of people that the Earth cannot carry.	○	○	○	○	○

How concerned are you about environmental issues? Please indicate your level of agreement with each of the following statements by marking (X).

	1 Not Concerned	2 Slightly Concerned	3 Somewhat Concerned	4 Extremely Concerned
11. I'm concerned about the state of the Earth.	○	○	○	○
12. I'm concerned about the state of the environment in Finland.	○	○	○	○
13. I'm concerned about the climate change and its harmful consequences.	○	○	○	○

How do you feel about environmental responsibility of Muovilami? Please indicate your level of agreement with each of the following statements by marking (X).

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
14. Fulfilling the legal obligations is enough for Muovilami to handle environmental issues.	○	○	○	○	○
15. Muovilami is already doing its share for the environment.	○	○	○	○	○
16. Muovilami will gain only minor benefits for its brand for its environmental efforts.	○	○	○	○	○
17. I am interested in knowing how much harmful environmental impacts is caused due to Muovilami operations.	○	○	○	○	○
18. I would like to decrease the harmful environmental impacts of Muovilami operations.	○	○	○	○	○
19. I am ready to put more effort in environmental responsibility, although it would increase my workload.	○	○	○	○	○
20. I think environmental issues should be taken more into account in our business sector.	○	○	○	○	○

Questions concerning environmental awareness

How familiar are you with environmental issues in general? Please indicate your level of agreement with each of the following statements by marking (X).

	1 Not at all aware	2 Slightly aware	3 Moderately aware	4 Extremely aware
21. Issues regarding environmental protection are familiar to me.	○	○	○	○
22. I know and understand concepts such as environmental impact and material efficiency.	○	○	○	○

How much do you know about the environmental issues regarding Muovilami? Please indicate your level of agreement with each of the following statements by marking (X).

	1 Not at all aware	2 Slightly aware	3 Moderately aware	4 Extremely aware
23. I know the environmental policy of Muovilami and its content.	○	○	○	○
24. I know what is ISO 14001 environmental management system	○	○	○	○
25. I know the most significant environmental impacts related to my work.	○	○	○	○
26. I know the most significant environmental risks related to my work.	○	○	○	○
27. I know the measures to decrease the harmful environmental impacts related to my work.	○	○	○	○
28. I know the legal environmental obligations concerning Muovilami.	○	○	○	○
29. I know enough about the recycling possibilities of waste generated at Muovilami.	○	○	○	○

30. Do you encounter environmental issues daily at your work?

☐ Yes ☐ No ☐ Cannot say

31. If its possible, tell one example of an harmful environmental impact related to your work?

32. Here you can propose some measure(s) which could decrease the environmental impacts related to your work.

33. What kinds of thoughts does the building of environmental management system arouse? Do you have questions or expectations regarding the environmental management system?

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

Hyvä vastaaja,

Muovilamille rakennetaan parhaillaan kansainvälisen ISO 14001-standardin mukaista ympäristöjärjestelmää. Ympäristöjärjestelmä on yrityksen johtamisjärjestelmä, jonka keskeisin tavoite on toiminnan haitallisten ympäristövaikutusten vähentäminen. Ympäristöjärjestelmän käyttöönotolla on saavutettavissa monia liiketoiminnallisia hyötyjä, kuten parempaa kilpailukykyä, riskienhallintaa ja imagohyötyä.

Järjestelmän rakentaminen itsessään ei kuitenkaan tuota tulosta ilman henkilökunnan sitoutumista ympäristönsuojelun edistämiseen ja ympäristöjärjestelmän tavoitteisiin. Henkilökunta on siksi tärkeässä roolissa järjestelmää luotaessa ja ylläpidettäessä. Tästä syystä tulen tutkimaan gradussani, kuinka järjestelmän rakentaminen vaikuttaa teidän asenteisiinne ja tietoisuuteen ympäristöasioita ja erityisesti Muovilamin ympäristövastuullisuutta koskien. Tämä kysely annetaan vastattavaksi kaikille Muovilamin työntekijöille. Lisäksi järjestelmän valmistuttua tullaan toteuttamaan satunnaisotoksena haastattelu osalle henkilökunnasta.

Vastauksenne ovat arvokkaita niin järjestelmärakentamisen kuin gradun kannalta. Kaikki vastaukset käsitellään anonyymisti ja luottamuksellisesti. Kyselyyn vastaaminen kestää noin 10 minuuttia.

Toivon, että olette rohkeita esittämään minulle ajatuksianne ja kysymyksiänne ympäristöjärjestelmän rakentamista ja tutkimusta koskien.

Ähtärissä 17.9.2019

Ystävällisin terveisin,
Jenni Vainioranta
Jyväskylän yliopiston kauppakorkeakoulu
Corporate Environmental Management
jenni.j.vainioranta@student.jyu.fi
040 412 3847

TAUSTATIEDOT

Valitse sopivin vastausvaihtoehto.

Ikä

◯ alle 30 vuotta

◯ 30-40 vuotta

◯ 41-50 vuotta

◯ yli 50 vuotta

Sukupuoli

◯ Mies

◯ Nainen

Olen työskennellyt Muovilamilla

◯ alle 2 vuotta

◯ 2-5 vuotta

◯ 6-8 vuotta

◯ 9-11 vuotta

◯ 12-14 vuotta

◯ 15 vuotta tai yli

Kysymykset koskien ympäristöasenteita

**Mitä mieltä olet seuraavista ympäristönsuojelua koskevista väittämistä?
Valitse sopivin vastausvaihtoehto kultakin riviltä.**

	1 Täysin eri mieltä	2 Jokseenkin eri mieltä	3 En samaa enkä eri mieltä	4 Jokseenkin samaa mieltä	5 Täysin samaa mieltä
1. Ympäristöä täytyy mielestäni suojella.	○	○	○	○	○
2. Ihminen ei saa toiminnallaan vaarantaa luonnon hyvinvointia.	○	○	○	○	○
3. Omalla toiminnallani on vaikutusta ympäristöön.	○	○	○	○	○
4. Jos muut eivät toimi kestävän elämäntavan mukaisesti, ei minunkaan kannata tai tarvitse.	○	○	○	○	○
5. Olen valmis tinkimään omasta elintasostani ympäristöongelmien vähentämiseksi.	○	○	○	○	○
6. Minulla ei ole keinoja vaikuttaa ympäristöasioihin.	○	○	○	○	○
7. Minua kiinnostaa ympäristöasioihin vaikuttaminen.	○	○	○	○	○
8. Ympäristö tulisi asettaa etusijalle, vaikka talouskasvu jonkin verran kärsisi.	○	○	○	○	○
9. Ympäristönsuojelu ja taloudellinen kasvu ovat mahdollisia samanaikaisesti.	○	○	○	○	○
10. Lähestymme maapallolla ihmismäärän rajaa, jota maapallo ei pysty kantamaan.	○	○	○	○	○

Kuinka huolestunut olet ympäristöasioista?
Valitse sopivin vastausvaihtoehto kultakin riviltä.

	1 En lainkaan huolestunut	2 Hiukan huolestunut	3 Melko huolestunut	4 Erittäin huolestunut
11. Olen huolissani maapallon tilasta.	○	○	○	○
12. Olen huolissani ympäristön tilasta Suomessa.	○	○	○	○
13. Olen huolissani ilmastonmuutoksesta ja sen haitallisista seurauksista.	○	○	○	○

Mitä mieltä olet seuraavista ympäristövastuullisuutta koskevista väittämistä?
Valitse sopivin vastausvaihtoehto kultakin riviltä.

	1 Täysin eri mieltä	2 Jokseenkin eri mieltä	3 En samaa enkä eri mieltä	4 Jokseenkin samaa mieltä	5 Täysin samaa mieltä
14. Viranomaisvaatimusten täyttäminen riittää Muovilamin ympäristöasioiden hoidossa.	○	○	○	○	○
15. Muovilami tekee jo oman osuutensa ympäristön hyväksi.	○	○	○	○	○
16. Muovilami saa ainoastaan vähäistä hyötyä brändilleen ympäristöponnisteluistaan.	○	○	○	○	○
17. Olen kiinnostunut tietämään miten paljon haitallisia ympäristövaikutuksia Muovilamin toiminnasta aiheutuu.	○	○	○	○	○
18. Haluaisin vähentää Muovilamin toiminnasta koituvia haitallisia vaikutuksia ympäristöön.	○	○	○	○	○
19. Olen valmis panostamaan lisää ympäristövastuuseen, vaikka se lisäisi työmäärääni.	○	○	○	○	○
20. Minun mielestäni ympäristöasioihin pitäisi kiinnittää toimialallamme enemmän huomiota.	○	○	○	○	○

Kysymykset koskien ympäristötietoisuutta

Kuinka tuttuja ympäristöasiat ovat sinulle?
Valitse sopivin vastausvaihtoehto kultakin riviltä.

	1 Ei lainkaan	2 Vain vähän	3 Melko hyvin	4 Erittäin hyvin
21. Ympäristönsuojelua koskevat asiat ovat minulle tuttuja.	○	○	○	○
22. Tunnen ja ymmärrän ympäristöalan käsitteitä, kuten ympäristövaikutukset ja materiaalitehokkuus.	○	○	○	○

Kuinka paljon tiedät Muovilamin toimintaan liittyvistä ympäristöasioista?
Valitse sopivin vastausvaihtoehto kultakin riviltä.

	1 En lainkaan	2 Vain vähän	3 Melko hyvin	4 Erittäin hyvin
23. Tiedän Muovilamin ympäristöpolitiikasta ja sen sisällöstä.	○	○	○	○
24. Tiedän mikä on ISO 14001- ympäristöjärjestelmä.	○	○	○	○
25. Tiedän työtehtäviini liittyvät merkittävimmät ympäristövaikutukset.	○	○	○	○
26. Tiedän merkittävimmät ympäristöriskit, jotka liittyvät työtehtäviini.	○	○	○	○
27. Tiedän, miten voisin vähentää vastuualueeni toimintojen haitallisia ympäristövaikutuksia.	○	○	○	○
28. Tiedän Muovilamin toimintaa koskevat lakisääteiset ympäristövaatimukset.	○	○	○	○
29. Tiedän riittävästi Muovilamin toiminnassa muodostuvien jätteiden lajittelu- ja kierrätysmahdollisuuksista.	○	○	○	○

30. Kohtaatko omassa työssäsi päivittäin ympäristöasioita?

☐ Kyllä

☐ En

☐ En osaa sanoa

31. Mikäli mahdollista, kerro jokin esimerkki omaan työhösi liittyvästä haitallisesta ympäristövaikutuksesta.

32. Ehdota jotain asiaa tai toimenpidettä, jonka avulla omaan työhösi liittyviä haitallisia
ympäristövaikutuksia voisi vähentää.

33. Millaisia ajatuksia ympäristöjärjestelmän rakentaminen sinussa herättää? Onko sinulla esimerkiksi joitain kysymyksiä tai toiveita ympäristöjärjestelmän rakentamiseen liittyen?

APPENDIX 3 Interview structure

General questions regarding environmental awareness and attitudes
- The importance of environmental protection
- Interest on environmental issues
- Concerns regarding environmental issues

The influence of EMS on environmental awareness, regarding
- Environmental management and policies
- ISO 14001 management system
- Environmental program
- Environmental impacts of Muovilami actions
- Environmental impacts, risks, and legal obligations regarding own work
- Means to decrease environmental impacts regarding own work

The influence of EMS on environmental attitudes and behavior
- Opinion about the current environmental work and program
- Willingness to participate into training sessions
- Willingness to invest more into environmental work

General feedback on EMS and the process of building the management system.