University of Groningen

Faculty of Spatial Sciences
Dr. Justin Beaumont

The relationship between the characteristics of a municipal climate change mitigation program and the motivation of participating SMEs on the example of Hamburg's 'UmweltPartner'

Author: **Heiko Fischer**
S2520052
h.fischer.1@student.rug.nl

Master program: Environmental and Infrastructure Planning

Date of delivery 09.02.2015

Table of Content

List of tables

List of figures

List of acronyms and abbreviations

°C	Degree Celsius
AR 5	Fifth Assessment Report
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CSR	Corporate Social Responsibility
EMS	Environmental Management System
ENGOs	Environmental non-governmental groups
EU	European Union
EUR	Euro
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
K	Kelvin
kWh	Kilo watt hours
m^2	Square meter
m^3	Cubic meters
mg	Milligram
N_2O	Nitrous oxide
Nm^3	Normal meter cube
MRH	Metropolitan Region Hamburg
OECD	Organisation for Economic Co-operation and Development
SME	Small and medium sized enterprise
t	Tonnes
U.S.	United States of America
UK	United Kingdom
UN	United Nations
W	Watts
WGII	Working Group 2

Abstract

The city of Hamburg, as all other cities around the world, has to deal with the consequences of climate change. As cities are not just one of the main affected systems, but also one of the main causes, they developed approaches to mitigate their own effects. One political instrument is to promote or facilitate climate change mitigation of their population. This includes also small and medium sized enterprises. This thesis investigates two aspects. On one side, the characteristics of the programs of Hamburg's 'UmweltPartnerschaft' have been investigated. On the other side, the motivation of participating SMEs of a group called 'UmweltPartner' has been determined. These two variables have been used to identify a relationship between the design of municipals climate change mitigation strategies and the motivation of participating small and medium sized enterprises. The relationship has been analysed by using descriptive methods and the Kruskal-Wallis-Test.

1 Introduction

Humans try to solve issues related to climate change as long as I can remember. At a personal level this memories correspond with the enthusiasm of my father to save energy through the establishment of improved insulation, the installation of a photovoltaic system on the roof and the reuse of rainwater for toilet flushing. However, later I majored 'Business Administration'. In this major I learned a lot about companies behaviour and motivation; also in relation to their environment. My minor, 'Sustainability in Humanities' had another perspective. The minor discussed the 'Suburbia-Syndrome' as identified by the 'German Advisory Council on Global Change' on the example of the 'Metropolitan Region Hamburg' (MRH). The syndrome describes the consequences of increased density of humans in specific areas for man-nature relationships (Beese, n.d.). During this minor, we discussed both, the effects of climate change on Hamburg and the role of companies in the MRH. However, except in the case of Hamburg's big companies, namely the harbour and Airbus, barely connections between companies and climate change have been investigated. This leads to the question how other companies, explicitly small and medium sized enterprises (SMEs) are connected to climate change.

The combination of knowledge about the affects of climate change on the MRH and SMEs motivation and behaviour leads to the following question: How can companies be triggered to be active in climate change mitigation? However, this thesis will not just have an isolated look at the companies; also the governmental side will be considered. Through the shift of policy competences in the field of sustainability from the national government towards regional and local governments (Jordan, 2008), these actors will be included in the research. This leads to the question: What are the motives and the role of municipalities within the triangle of climate change, companies and government. Or: Why and how can cities influence companies to mitigate climate change? As various cities are already active in the motivation of companies for climate change mitigation, it is obvious to ask, if cities can motivate companies more effective.

1.1 Research question

The aim of this thesis is to enable municipalities to mobilize SMEs more effectively. Therefore, the thesis will investigate the design of municipal climate change mitigation mobilization strategies and the motivation of already participating SMEs. These investigations will be used to identify relationships between the design of the governance mechanism and the motivations. Knowledge about a relationship can

help municipalities to address SMEs' motivation in their motivation campaigns and increases their success in acquisition through it. Therefore, this thesis tries to answer the main question:

"What can municipalities learn for the promotion of their climate change mitigation mobilization strategies from the relationship between the design of their programs and the motivation of participating SMEs?"

As part of this question the thesis will investigate the following questions:

- What are the mechanisms municipalities have in order to mitigate climate change?
- Why is it worth for municipalities to mobilize SMEs for climate change mitigation?
- How are municipal climate change mobilization strategies designed?
- What is the role of SMEs' motivation in the mobilization process?
- What factors shape the motivation of SMEs to mitigate their impact on climate change?
- What are the motivations of SMEs to participate in municipal climate change mitigation strategies?

1.2 Challenge for the research

A potential challenge for the research is to gain access to SMEs' motivation for their participation. This challenge exists due to three reasons.

Firstly, it can be assumed that medium sized enterprises have complex organizational structures, which are not open for the public. Through the complexity, it might not be possible for researcher to identify a person with knowledge about the motivation for the companies' participation.

Secondly, some SMEs do not publish contact information. The reasons for that can be, that they do not need these information published in order to get in touch with their customers as they can be casual ones. Another reason might be, that they do not want to publish the data, because all potential customers already have their contact information.

And finally, it might be that companies are not willing to participate in the research as it could tie up their resources without offering a direct benefit for them.

1.3 The relationship between cities and climate change

The relationship between cities and climate change is based on two aspects; cities have an impact on climate change and climate change has an impact on cities.

Whereas the impact of cities on climate change is not given through themselves, it is given through the activities of their dwellers and supporting activities. These activities can be classified into different sectors; the most polluting sectors are energy supply, industry, transport and buildings. These activities lead to a situation where 71% of the global carbon dioxide (CO_2) pollution can be related to cities (UN Human Settlements Programme, 2011).

The impact of climate change on cities is described by the report IPCC WGII AR5 (2014). Climate change leads to an increased frequency and strength of heat waves, more droughts, heavy rainfall and floods. These challenge the health of cities' inhabitants, their nature infrastructure and economy. Furthermore, climate change could also change the socio-demographic structure within cities. An increased damage of houses through weathering and oxidization (Revi et al., 2014) might leads to more precarious living situations. Additionally, 50 million climate refugees till 2050

(Myers, 2002) might cause conflicts based on contests about resources, ethnic conflicts or fast changes of the socio-demographic situation (Reuveny, 2007).

Following this argumentation, cities are able to mitigate climate change as they pollute anthropogenic greenhouse gasses (GHG) as CO_2. Furthermore, cities and their inhabitants might be affected by climate change in various ways as explained above. This leads to a situation in which cities can take actions in order to mitigate the threats they might have to face.

1.4 Outline

In the second chapter the role of SMEs from a municipal perspective will be discussed. Therefore, the potential of SME mobilization for municipal climate change mitigation within the political instruments will be determined. In a next step, an analytical framework will be developed. It allows a further classification of SME mobilization among different dimensions. This framework will be used for the evaluation in the sixth chapter.

The third chapter will elaborate on how municipalities can improve the success of their mobilization strategies based on knowledge about the motivation of their targeted SMEs. Therefore, a literature review of the field of marketing will be applied.

In the fourth chapter an overview about the motivation shaping forces within the ecosphere of SMEs will be given by literature review. This allows getting an understanding of the motivation of SMEs to participate in municipal climate change mitigation strategies. These motivations represent the second part of the analytical framework, which will be used in chapter six.

In the next chapter, the research strategy will be explained. Therefore, the case for the study and the data compilation methods will be introduced.

The collected data will be used in the sixth chapter to identify relationships between the design of the governance mechanism and the motivation of participating SMEs. Moreover, the consequences for municipal climate change mitigation mobilization strategies will be drawn.

Finally a conclusion will be drawn. To do so, the questions addressed in section 1.1 will be answered. Furthermore, the answers will be analysed towards the consequences for municipal climate change mitigation mobilization strategies in practice and related further research.

2 Municipal climate change mitigation

It has already been, explained, how cities affect and are affected by climate change. This chapter shows the opportunities of municipalities to mitigate these effects. Furthermore, the approach of SME mobilization will be classified within the mechanisms of municipal climate change mitigation. Later on, the framework for the classification of the political instruments of SME mobilization will be developed. This framework will be used in the sixth chapter to analyse the relationship between the design of the programs and SMEs' motivations.

2.1 Classification of SME mobilization

According to several researchers (Bulkeley & Kern, 2006; Corfee-Morlot et al., 2009; Kern & Alber, 2008; UN Human Settlements Programme, 2011) cities have four opportunities to mitigate climate change.

The first one, self-governing, identifies the municipality as a policy target of itself. Municipalities can reduce their own impact on climate change by reducing their energy consumption. This can be done by energy-saving projects for public real estates or equipment. Another opportunity is to purchase energy from energy

sources, which are environmental friendlier as fossil energy sources are. This can be considered as an easy method, because the city is barely dependent on other parties. However, the impact is limited as the municipal energy consumption is just responsible for 1-5% of local CO_2 emission.

The second approach addresses the municipality as an owner or shareholder of utility companies. A municipality as a provider of energy, transport, water and waste service can implement renewable energy sources or reduce the impact of waste disposals by cogeneration systems. Another opportunity is the provision of good established public transport systems. It has to be pointed, that this approach becomes less important in the future due to the global notable liberalization of these services.

The municipality as regulator and planner is the third approach. Municipalities often can set minimum energy-efficiency standards for buildings and industry. However, to do so, they often have to follow guidelines of higher authorities. Moreover, they can decrease the amount of travel by increasing the density via brownfield development and mixed-use development. Furthermore, improving the infrastructure for other transport means can reduce individual motorized traffic. This opportunity is constrained by higher authorities, which often have an impact on the activities of municipalities within this field.

The last approach is the municipality as facilitator and promoter. This mode enables self-government of the citizens and the public sector. As a consequence, these parts of the society can mitigate climate change without the establishment of laws and rules. Nevertheless, the municipalities can trigger or steer the activities of other actors by using several governance mechanism. Municipalities can advertise low emission techniques or offer required infrastructure. Furthermore, they can enable activities via informational and monetary support. Information can be used to create a greater awareness or offer guidance for specific activities; monetary support can be provided via incentives and subsidies.

2.2 SMEs as target group

As mentioned above, mobilization can target a wide range of groups within the society. An often-addressed target group is companies, because they facilitate various activities within a society. For this reason, they are one of the main polluter of GHGs. Mobilization strategies try to decouple this economic activities from this emission. This shall guarantee further economic stability or growth without strengthening the effect of economic activities on climate change (Lemos & Agrawal, 2006).

2.2.1 SME definition

There is no explicit global definition of SMEs. Most countries and organizations are using the number of employees, the revenue, the asset, the organizational structures and the dominance in the sector as variables (Osteryoung & Newman, 1993). Some are even more complex. The United States of America (U.S.) distinguish between various business sectors (Hammer, 2010) and the OECD (2005) and the World Bank (Ayyagari, Demirgüç-Kunt, & Beck, 2003) use country and regional specific definitions. In African Countries every company with less than 200 employees is a SME, in Japan the limit is 300 employees (Ayyagari et al., 2003) and in the U.S. the limit is set by 500 employees (Hammer, 2010). The EU Commission (2003) gives an often applied and specific definition. The specificity is given by the fact that the definition distinguishes between three categories of SMEs (table one). According to this definition, SMEs in general are independent enterprises with less than 250

employees. Moreover their annual turnover is at most EUR 50 million or their balance sheet is at most EUR 43 million.

Table 1: SME categories of the EU

Enterprise category	Number of employees	and either	Annual turnover in EUR	or	Annual balance sheet in EUR
Microenterprise	<10		≤ 2 million		≤ 2 million
Small enterprise	<50		≤ 10 million		≤ 10 million
Medium-sized enterprise	<250		≤ 50 million		≤ 43 million

However, these variables are not the only opportunity to categorize enterprises. According to Osteryoung and Newman (1993) SMEs are companies which are neither partly or completely owned by a public entity nor shares of them are traded at a stock market. A further distinction between small and medium sized enterprises is possible through the personal liability for debts obligations of the owners. In case of a small company personal liability is given, in case of a medium sized company this is not absolutely given.

The above-described definitions, including the one of the EU, are often used in official registers. Additionally, they are tailor-made for specific internal markets. The one by Osteryoung and Newman has the benefit that this definition goes beyond boundaries, which allows an easier comparison with further research. Another benefit is, that this definition allows a categorization of an enterprise on its legal form; knowledge about the balance sheet, which is often not accessible, is not required.

In this research SMEs are defined as companies with at most 500 employees. Furthermore, SMEs are neither partly nor completely owned by a public entity nor are their shares traded at a stock market. This allows an international application of the research, as the highest amount of employees of the presented definitions will be applied. Additionally, this definition includes the responsibility of company-owners for the behaviour of the company.

2.2.2 The potential of SME mobilization

The amount of potential partners for mobilization for climate change mitigation seems to be endless. Between 95% and 99% of companies in each country of the world are SMEs (OECD, 2005). Within the member states of the OECD, the share of SMEs on all companies varies between 98.23% in Japan and 99.94% in Greece. The median of the OECD-members is 99.74% (OECD, 2012). Also within the EU, they play an important role. In total SMEs have a share of 99.8% of all company types (Gagliardi et al., 2013). The major share of SMEs can also be found in Hamburg. In 2009 99.58% of the companies in Hamburg have been SMEs (Günterberg, 2012). Table two gives a more detailed overview over the distribution of Hamburg's companies according to their size.[1]

[1] OECD's, EU's and Hamburg's data define SMEs as companies with less than 250 employees

Table 2: Distribution of Hamburg's companies according to size[2]

Number of employees	Frequency	%
<10	93,586	91.10
<50	7,104	6.92
<250	1,598	1.56
>250	436	0.42
Total	102,724	100.0

However, SMEs do not only have a major share of the public economy, they also are one of the major employer. According to the World Bank SMEs median contribution in each global country is 66.89%. A view on the regional level (table three) shows, that SME are especially important in the Sub-Saharan Region and in South Asia where the median is above 75%. Apart from the positive side of employment generation, this means that SMEs' employees are a main contributor for commuting related CO emission. An increased CO emission is noticeable in various cities all around the world in rush hours (Han & Naeher, 2006). Through various processes in the atmosphere these emissions can convert to the GHG CO_2 (Wiedmann & Minx, 2008).

Table 3: SME contribution to employment shares per region[3] [4]

Region	Median in %
Global	66.89
Sub-Saharan Africa	76.85
East Asia and Pacific	65.7
Europe and Central Asia	66.32
Latin America and Caribbean	67.77
Middle East and North Africa	57.31
North America	59.27
South Asia	80.26

The identification of SMEs as a global main employer becomes even more important if a correlation between number of employed people and GHG emission is assumed. It has been shown that, at least within the EU, various emissions correlate with the number of employees. For GHG it has been estimated, that CO_2 correlates with a value of 0.97, CH_4 correlates with a value of 0.94 and N_2O correlates with a value of 0.92 (Constantionos et al., 2010b). Following the share of SMEs on the employment market in combination with the correlation, SMEs are a main causer of GHGs. However, the values can not be applied one-to-one for other regions, because of individual correlation for different sectors of economy and an individual share of each sector in other regions.

More reliable data is barely possible, but the one that exists approves both, the remarkable share of SMEs on GHG emission and the regional dependence of this share. For example in the UK SMEs account for 60% of businesses CO_2

[2] (based on Günterberg, 2012, p. 72)
[3] (based on Demirguc-Kunt, Ayyagari, & Maksimovic, n.d.)
[4] SMEs defined as companies with 250 employees and less, North America: 300 employees

emission (Comission of the European Communities, 2007) and in the Australian state Victoria they account for 39% (Rothberg, 2011). In the City of Rotterdam, SMEs have more CO_2 emissions per square meter (0.12 tonnes) than municipal buildings or citizens buildings (Sustainable 2010-2014 Programme Agency & City of Rotterdam/Rotterdam Climate Initiative, 2013).

Another aspect of the potential of SMEs is reasoned in their activities up to now. According to several researcher (Burch, Schroeder, Rayner, & Wilson, 2013; Revell, Stokes, & Chen, 2010; Spence, Jeurissen, & Rutherfoord, 2000), SMEs are often not active in the field of GHG mitigation, because they are not aware of their impact, do not have the money or the knowledge or do not know how to transfer their willingness into practice. Furthermore, regulations in the field of SMEs often fail, because their amount is too high (N. Gunningham, 2002). On the other side, they often think, that a greater environmental awareness would increases their success on the market (Revell et al., 2010; Spence et al., 2000). This combination makes them a potential target group for mobilization, because they see lowering their GHG emission as an economic benefit, but are missing a trigger in form of knowledge or money. Following this, SMEs often need an external trigger, such as the government, to be active in this field (Gadenne, Kennedy, & McKeiver, 2008). These combinations make them a hidden reserve of municipal climate change strategies.

Additionally, SMEs barely adapt to disasters caused by climate change such as extreme weather events. Even though their uninsured losses are highly notable (Ingirige, Joness, & Proverbs, 2008), they are often lacking adaption strategies or even awareness of this issue (Wedawatta & Ingirige, 2012). This makes them highly vulnerable for property damage and monetary losses.

2.3 Characteristics of mobilization strategies

So far, it has been shown, that the government includes external actors in their climate change mitigation strategies. It also has been shown, that SMEs are a valuable target group for mobilization.

In the following paragraphs, an analytical framework will be developed, which allows a distinction between different governmental mobilization strategies. Therefore, this section will explain five dimensions of SME mobilization with several characteristics. An overview of the dimensions and their characteristics is presented in figure one. Furthermore, to explain the dimensions, the characteristics of each dimension will be linked to an example.

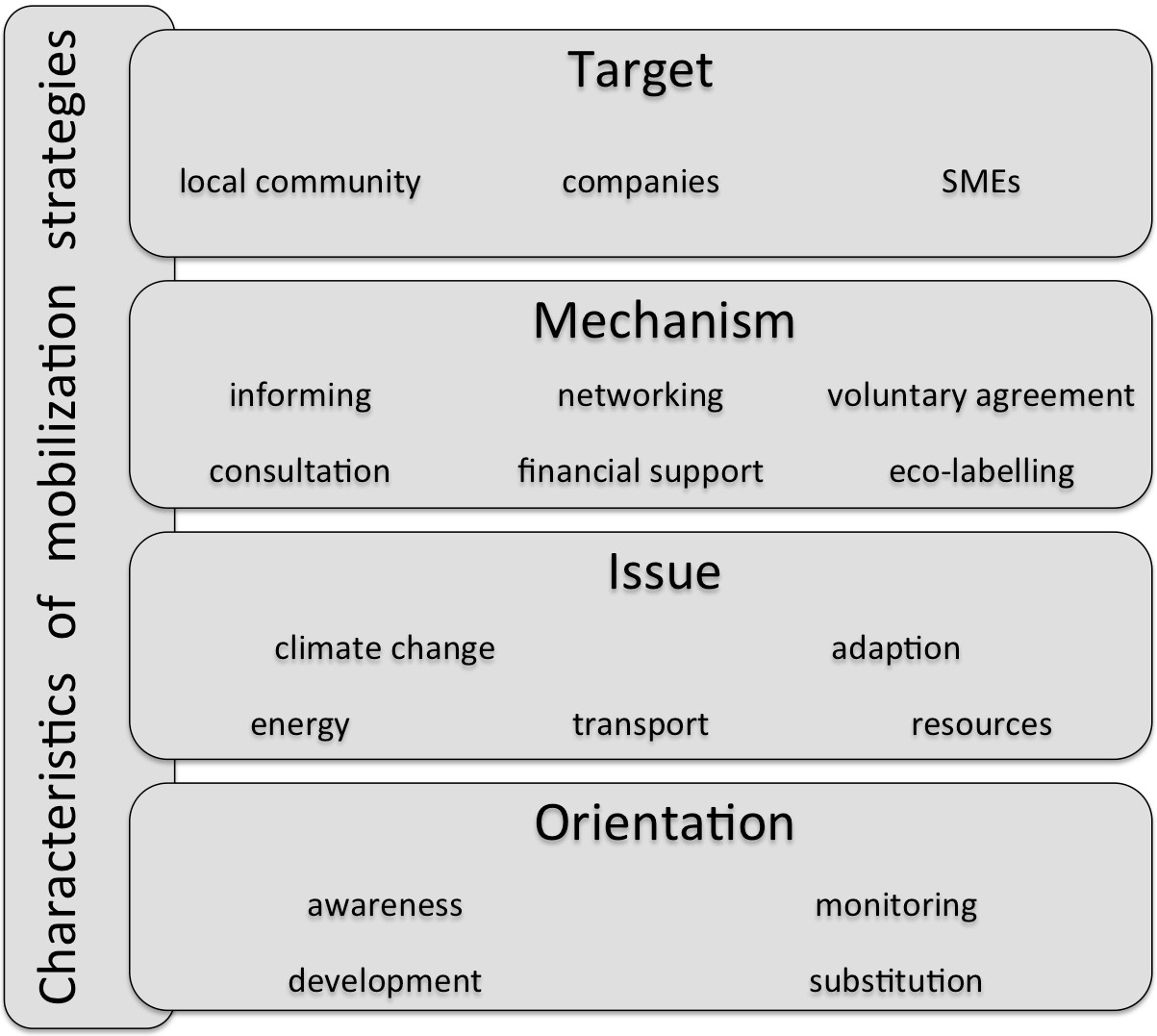

Figure 1: Characterization of mobilization strategies

2.3.1 Target of mobilization

The first dimension is the target of mobilization. SMEs can be mobilized by addressing different target groups. Promotion can address the local community in general. An example for this is the program 'Rationelle Energieverwendung' in Heidelberg, Germany. This project supports financially natural and legal persons that are starting an energetic renovation of their owned or rented real estate. Furthermore, it also supports the construction of passive houses and the installation of ventilator systems with waste heat recovery (Stadt Heidelberg, 2010).

Another opportunity is that companies are addressed more specifically. A project, which addresses explicitly companies, is the 'Benchmarktpool-Gebäudebtrieb' of the City of Frankfurt am Main, Germany. This project provides key performance indicators of energy use for developers of office buildings. They, in turn, can confront their construction companies, architects etc. with the localized target measures in order to reduce their future primary energy consumption (Energiereferat, 2008). Following this, the program can be considered as company and developer specific.

The last opportunity in this dimension is to address SMEs explicitly. As in the last example companies have been addressed, it is also possible to limit their participation through the number of employees or the legal form of an enterprise.

2.3.2 Governance mechanism

The second dimension is the applied governance mechanisms. Within this dimension, informing is the only one with a one-way flow of information. To inform SMEs, various communication means, such as news media, posters or pamphlets, can be used (Arnstein, 1969). This becomes a strong approach, if a lack of knowledge exists. It might be a lack of general knowledge about climate change as shown by Harriet and Bulkeley (2000) or a lack of self-related knowledge as shown above for SMEs and their impact on climate change. The benefit of this approach is, that information can be provided fast and cheap as the communication process does not involve citizens until it reaches the recipients. This makes informing a government-internal process. Furthermore, informing enables municipalities to reach many recipients in short time through mass media. However, informing also tend to "provid[e] superficial information, discourag[e] questions, or giving irrelevant answers" (Arnstein, 1969, p. 219). This combination makes informing an approach, which is valuable if information has to be delivered fast and/or cheap. On the other side, the approach is often lacking a depth in knowledge, which reaches the recipient. Through that, the approach can be applied for content, which does not require a deeper understanding of an issue, for example in the case of an introduction to a subject.

The second approach, which is commonly applied, is networking. Often, this mechanism is used not only to describes the potential of the multiplier effect of pooling resources (Healey, 2006), but also to create a commitment. Whereas this commitment is not necessarily formal, it can lead to an informal one. SMEs, which join a network, build a relationship to other actors and commit to be active informally. The downside of networks is, that networks might not be able to transform their ideas to concrete projects as they are often enable to mobilize the required resources. On the other side, a network is an arena, which allows developing ideas beyond societal boundaries. This allows the linkage of different expertise and challenges concepts, which are based on established practice (Healey, 2006). An example for this is the German 'Energie-Tische'. This is a meeting point of the government, companies and inhabitants. The program aims to be a platform for discussions about potential climate change mitigation projects (Fischer & Hänisch, n.d.). Following this, municipalities can use this mechanism just by providing the facilities and moderating a discussion. This lowers the boundaries for municipalities to use this approach, as they posse the facilities anyhow. Through the uncertainty about the outcome of this approach, it is barely possible to predict mitigated GHG in advance. Therefore, municipalities should use this as an additional approach, which is not included in their GHG mitigation plan.

During the 'Energie-Tische' program informal agreements can also shift to voluntary agreements, which is another approach. This approach gives companies the opportunity to reach the environmental targets in their own way, which gives them more flexibility. Furthermore, a benefit for the government is, that no new regulations are required, which prevents a long-term bargaining process. Nevertheless, threatening with regulations etc. can influence the negotiating process with companies about the preferred targets (Price, 2005). The benefit of voluntary agreements is, that voluntary agreements often reach the committed target, especially when it comes to industrial energy efficiency. However, in the case of voluntary agreements governments are dependent on public opinions. The reason for this dependence is, that companies will not enter an agreement, if they are not pressured by the public (Vermeulen & Kok, 2002). Through this combination, informal

agreements should be applied if the majority of the inhabitants and media are already concerned about climate change.

The fourth type is consultation and training. In this case the municipality offers knowledge to the SMEs (Kern & Alber, 2008). This can be done by their own employees or by external consultants. Whereas the own employees have their strength in traditional governmental tasks as hazard adaption, the potential of external consultants is unlimited. In contrast to informing, this approach includes tailor made and two-way communication (Arnstein, 1969). This approach has its strength in case those SMEs are lacking knowledge to transfer their willingness to act into practice. The weakness of the approach is, that the costs are high and cities are often dependent on monetary support of a higher governmental level (Fitzgerald, 2008). Through this combination, the mechanism is useful for cities with sufficient liquid assets. Additionally, it is useful if the target group has ambitions but lacks the ability to transfer these ambitions into practice. This is especially often the case in SMEs as they need their human capacity to ensure their 'normal' business responsibilities. An example for this mechanism is the initiative 'Sustainability at Work' of the City of Portland. This initiative offers tailor-made advices in the field of energy efficiency for various company sizes and sectors (City of Portland, 2014).

The fifth governance technique is financial support. This, so called market-based instrument, includes subsidies, incentives and deposit-refund schemes, which aim to support monetarily the activities of SMEs. The approach lowers the boundaries of investments for companies (Jordan, Wurzel, & Zito, 2005). Following this, the approach has its benefits when the monetary boundaries are too high. This is often the case for SMEs as their liquid asset often have to be used to survive (Jenkins, 2004). The downside of the approach is, that the companies might temporarily reduce their impact through better technology. However, these do not last for longer as a transition of the attitude is missing (Hicks & Dietmar, 2007). Due to these benefits and burdens, this mechanism is useful if cities target changes, which require high investments. An example for this approach is the 'Münchener Förderprogramm Energieeinsparungen' of the City of Munich. The program supports buildings owners, developers and energy companies, except public entities, to improve their energy balance and reduce energy loss through, e.g. transformation loss or inefficient energy use (Die Landeshauptstadt, 2013).

Another approach is eco-labelling. Cities have the opportunity to establish either a single-issue label or a multi-issue label. Companies are allowed to use the eco-label to inform their potential costumers, that the requirements of the label are met. The idea is, that responsible consumers consider this in their purchase decisions and thus the company will increase their market success (Jordan et al., 2005). However, often SMEs, selling climate change unfriendly products such as injection moulding companies, do not participate in eco-labelling. Most of the time, participating companies, are already environmental friendly but do not have the label. On the other side, labels have a positive impact on the sells of participating companies. As a consequence of this, companies which already meet the majority of the criteria often fulfil also the missing requirements by improving their environmental performance towards the criteria (Horne, 2009). Therefore, the mechanism should be applied when companies are already active in climate change mitigation but are not able to benefit from their activities on the selling market.

The last opportunity for municipalities is to link these governance mechanisms to approaches of other institutions. An example for this would be that municipalities inform the companies about Environmental Management Systems (EMSs) of other organizations such as the EU. Among others, this could be the environmental

management and audit system of the EU or voluntary agreements of the industry with a national state.

2.3.3 Issue

The third dimension is the issue addressed. Municipalities can address the climate change in general or they can address it more explicit.

Environmental non-governmental organizations (ENGOs) performed several general climate change campaigns. Therefore, ENGOs as WWF, Ozone Action, Friends of Earth etc. used powerful pictures of habitats and animals to address the civil society and companies (Gough & Shackley, 2001). This general issue of climate change seems not to be addressed by municipalities in order to mobilize their inhabitants, but it is, nevertheless, an opportunity for them. Municipalities should address this issue when there is a lack of knowledge about climate change. Another suitable circumstance to address climate change in general is given, when an increased awareness is useful to apply further mechanisms, e.g. in the case of voluntary agreements. However, as no concrete behavioural or technical changes are addressed, a transition in companies' behaviour is unlikely. Municipalities should use this issue rather to create a general interest in the subject or as a kick of for further issues.

Within the more explicit issues, the municipalities can mobilize SMEs to mitigate the effects of climate change or mitigate their effect on climate change. The mobilization, which targets the effects of climate change, aims "[a]nticipatory adaption" (Downing, Ringius, Hulme, & Waughray, 1997, p. 28) of SMEs on expected future hazards. This adaption can be considered as a prevention of climate impacts on stock. This issue could be addressed when cities are located in places where extreme weather events are predicted or the infrastructure and facilities of SMEs are especially vulnerable. In the case of the harbour city Rotterdam, the municipality wants to cooperate with companies in order to mitigate flooding based damages. Therefore, it promotes the establishment of flood-proofed construction by information and hazard simulation (van Peijpe et al., 2013).

The other mobilization issues aim to mitigate the affects of SMEs on climate change. Suitable issues for this are energy, transport and resources.

An example for a city, which addresses energy is the City of Cape Town ("Energy Efficiency Forum for Commercial Buildings," n.d.). Their forum for energy efficiency of commercial buildings is an information hub for several economic sectors to reduce their energy consumption. Governmental institutions and best practice examples enable other participants to safe energy through practical information. Addressing this issue can be suitable for cities with high-energy consumption, e.g. through heavy industry, or with an electricity mix with a high share of energy sources as oil and coal.

The example for the issue of transport can be found, again, in Cape Town. The initiative 'travel SMART' aims to reduce the use of single occupancy vehicles by giving employers the opportunity to provide information and options to their employees. To reduce the use of the single occupancy vehicle, the city promotes the establishment of public transport, non-motorized transport and the formation of car pools (The Sustainable Transport Unit & City of Cape Town, n.d.). Municipalities can address this issue, if their city has a low percentage of single occupancy vehicles in their modal split. This becomes even more evident, if the cities have a well-established public transport system and/or biking infrastructure with a low capacity utilization.

The last issue to address is resource consumption. The project 'San Francisco Green Business' (2009) offers knowledge and technical assistance to reduce the

resource consumption, improve reuse of resources and reduce waste production. This lowers the GHG emission in various ways: (1) the transport to the company does not take place, (2) the resources do not have to be produced and (3) the landfills pollute less GHG as CH_4 (Boeckx, Cleemput, & Villaralvo, 1996). This issue is suitable for municipalities when their cities' economy is mainly based on the secondary economic sector, which transforms raw or intermediate materials into goods. The reason for that is, that this economic sector has a higher material flow and waste than the tertiary (services) or primary (extraction and production of resources).

2.3.4 Orientation

The last dimension is orientation. Mobilization strategies can increase awareness, monitor current situation, develop stock or substitute stock.

One awareness campaign can be found in Cape Town. The project 'Climate Smart' used various campaign elements as T-Shirts, button badges, outdoor advertising etc. to increase the awareness of residents, businesses and other members of the society (Ozinsky, 2012).

Another opportunity is to monitor the current status. This is often done by EMSs as the ISO 14001 or other systems, which monitor key performance indicators. An example for this can be found in Ningbo. The municipality offers a subsidy to all companies, which apply the Cleaner Production Promotion Act. This act is passed, if companies monitor their resource consumption and waste production during the production life cycle. The idea is, that companies apply reduction strategies afterwards (Hicks & Dietmar, 2007).

The last two orientations are focusing on stock and will be explained through two issues, energy and resources. When we think about stock, we have two options; we can improve the actual stock or substitute it with another one.

If stock development in the case of energy is considered, the approach is to reduce the energy consumption. This can be done, e.g. by better insulation as shown by the case in Heidelberg, the already mentioned program 'Rationelle Energieverwendung'. Legal entities, which want to reduce the rate of transfer of heat to maximal 0.20 W/m^2K, can apply for funding. This reduces the CO_2 emission by reducing heating (Stadt Heidelberg, 2010). An easy example for resource reduction can be found in the example of San Francisco. Its green business initiative wants to reduce the paper consumption by promoting two-sided printing in offices (San Francisco Green Business, 2014).

Another opportunity is improvement via substitution. In the case of electric energy this would be a shift from conventional energy sources towards renewable or nuclear energy sources. Ones again, this kind of mobilization strategy can be found in Cape Town. The City sells to companies purchasing certificates for electricity produced by wind. This allows companies to claim that they purchase renewable energy (City of Cape Town, 2014). For the case of resource use reduction by stock substitution the case of the 'Electric Transport Centre' in the City of Rotterdam is valuable. This institution offers information about electric vehicles for several target groups and offers test rides to companies. The goal is to motivate companies to substitute their petrol engine cars with hybrid cars, plug-in hybrids cars or electric cars. By doing so, the use of petrol can be reduced, which reduces the CO_2-emission of transport (Sustainable 2010-2014 Programme Agency & City of Rotterdam/Rotterdam Climate Initiative, 2013).

2.4 Conclusion

This chapter discussed the opportunities of municipalities to mitigate their impact on climate change. The approaches of self-regulation, the regulation of the pollution of municipals' utilizes companies and regulation of the inhabitants lead to restricted efficiency due to low GHG emission, loss of relevance through privatization and constriction by higher authorities. An approach, which addresses the majority of GHG emissions, is the approach of promoting and facilitation. A rather promising approach is the governance mechanism promoting and facilitating the citizens and the public sector.

Within this approach a suitable target group is SMEs as it can be assumed, that they are responsible for a major share of cities' GHG emissions. Furthermore, this target group has often not lowered their impact on climate change so far. Additionally, regulation of SMEs seems to be not sufficient.

To mobilize SMEs, municipalities can design their projects with different characteristics in the dimensions target, mechanism, issue and orientation. These characteristics in the dimensions will be used in the sixth chapter to analyse the mobilization strategies of the City of Hamburg.

3 SME' motivation as success criteria in municipal climate change mitigation mobilization strategies

So far, it has been described what opportunities municipalities have to mobilize SMEs for climate change mitigation and how these projects can be distinguished. This chapter will explain the role of SMEs' motivation in the success of municipal climate change mitigation motivation strategies. Therefore, the communication process between municipalities and SMEs and the decision-making process of SMEs will be introduced.

3.1 The communication process

A model of the communication process (figure two) shows, the major elements in the communication process, the source and the receiver, at the beginning and in the end of the process. The source is a person or an organization, which shares information. The process starts, when the source starts to select its' communication means, content and design to express its' thoughts; this process is named encoding. The process of encoding leads to the message. This message is transported to the receiver by the communication channel. The receiver transforms the message back into thoughts. This process is called decoding. This decoding is dependent on the perception of the receiver, which is based on its experience. The communication process is successful when the decoded thoughts match the desired thoughts of the source. This success is likely, when the source has an increased knowledge about the receiver. This enables the source to be in the encoding process more receiver oriented (Belch & Belch, 2003).

In the case of SME mobilization by municipalities, the source is either the person who is responsible for the program or the municipality and the receiver is the group of targeted SMEs. The communication process can be defined as successful, when the decoding of the SME leads to the intended thoughts of the municipality. In the case of municipal climate change mitigation motivation strategies, this is the case when SMEs decide to participate in municipals' program. Municipals can influence the success of decoding, and as a consequence of that also SMEs decision, due to awareness of SMEs' field of experience.

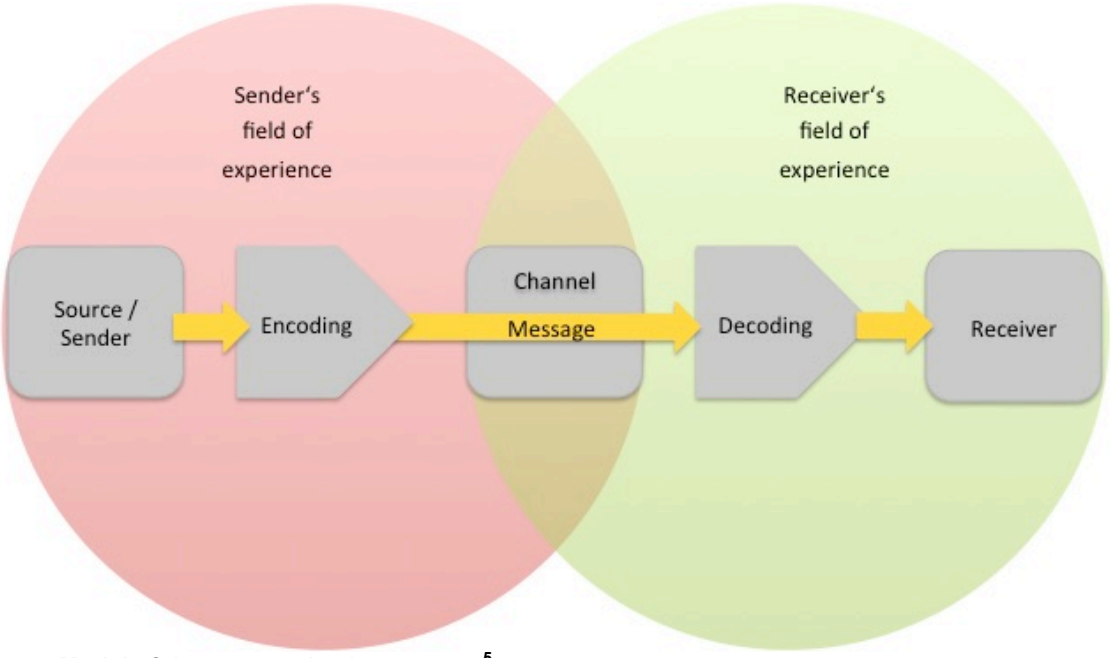

Figure 2: Model of the communication process[5]

3.2 Decision-making process

The last section introduced the communication process between municipalities and targeted SMEs. Crucial within the process is, that SMEs decode the message as intended by the municipality and they decide to participate. From a municipal perspective, this is dependent on the experience of the SMEs. From an SME perspective, this field of experience can be described as decision-making process. To understand this decision-making process, this section will describe variables of the decision, which are equal to the variables of the experience.

The decision-making process can be described by "(1) problem recognition, (2) search for information, (3) evaluation of alternatives, (4) choice, and (5) outcome of choice" (Assael, 1984, p. 75). Transferred to municipals' mobilization process, the starting point of the process can also be entitled as need arousal. The 'need' describes the SMEs' actual and its' desired situation and is the trigger of SMEs activities. Furthermore, this need depends on the variables past experience, characteristics, environmental influences, marketing stimuli and motivation (Assael, 1984).

The past experiences describe SMEs perception of the own current situation, their perception of participation in comparable programs or their perception in other climate change mitigation activities.

The legal form, the numbers of employees, the organizational structure, the economic sector etc. determine the characteristics. Additionally, the personality of the decision-maker determines the characteristics as well.

Another variable are environmental influences. These describe how SMEs are influenced by their ecosphere. A more in-depth description of the influencing factors for SMEs is given in section 4.1.

Marketing stimuli are past information, which SMEs descripted from municipal messages.

The last variable is the motivation. The motivation is the conscious or subconscious driver, which let SMEs' satisfy their needs. The greater the difference between the current and the desired situation is, the more stressed is the SME. To

[5] (based on Belch & Belch, 2003, p. 139)

reduce this tension, SMEs will act to reduce the gab towards their desired situation (Schiffman & Kanuk, 2000). An in-depth overview about the motivation of SMEs to participate in municipal climate change mitigation projects is given in section 4.2.

Following this description of SMEs' decision-making process and field of experience, the motivation is a key variable as it is the only variable, which starts the process of decision making. This is an important contrast to the other variables, which do not start the process and are just influencing.

3.3 Conclusion

This chapter introduced the communication process between municipalities and SMEs. The process showed, that for the participation of SMEs in municipal climate change mitigation mobilization programs, municipalities have to understand the SMEs field of experience as it influences the process of decoding. This understanding is necessary as it enables the SMEs to decode the message as intended by the municipalities, which leads to a participation of the SME.

From the perspective of the SME, the variables of the decision-making process have to be considered. The process is influenced by different variables. The motivation is the most important variable as it is the only one, which can start the process. However, this is not the only reason, why the motivation is so important. It also influences SMEs' decoding process of municipal messages.

Through that combination, the motivation of SMEs has two important roles in municipal climate change mitigation mobilization strategies. On one side is it the cause for SMEs activities in the program itself. On the other side is it important for municipalities to know this motivation as it influences the way SMEs understand their messages.

4 The SME perspective

In the section 2.3 an analytical framework for an analysis of SME mobilization strategies has been developed. Now, the motivation of SMEs to participate in such program will be examined in detail. This will allow the identification of match up later on. In general the reasons can be distinguished into objective and normative reasons. Whereas the objective reasons can also be considered as entrepreneurial, the normative reasons go beyond traditional entrepreneurial acting. However, before these reasons have been considered, the entrepreneurial environment of the decision in relation to SMEs will be described.

4.1 Particular entrepreneurial environment

The entrepreneurial environment for participation in mobilization strategies can be distinguished into an external environment and an internal one. The owner and management hierarchy of a company characterize the internal environment of a company. The external one is shaped by stakeholders and institutions. All characteristics are important in order to understand the behaviour of SMEs in the field of environmental responsible behaviour.

At first, an overview about the stakeholders of an SME is given. This helps to understand the multichannel influences on SMEs and their behaviour. An overview of the stakeholders is provided in figure three.

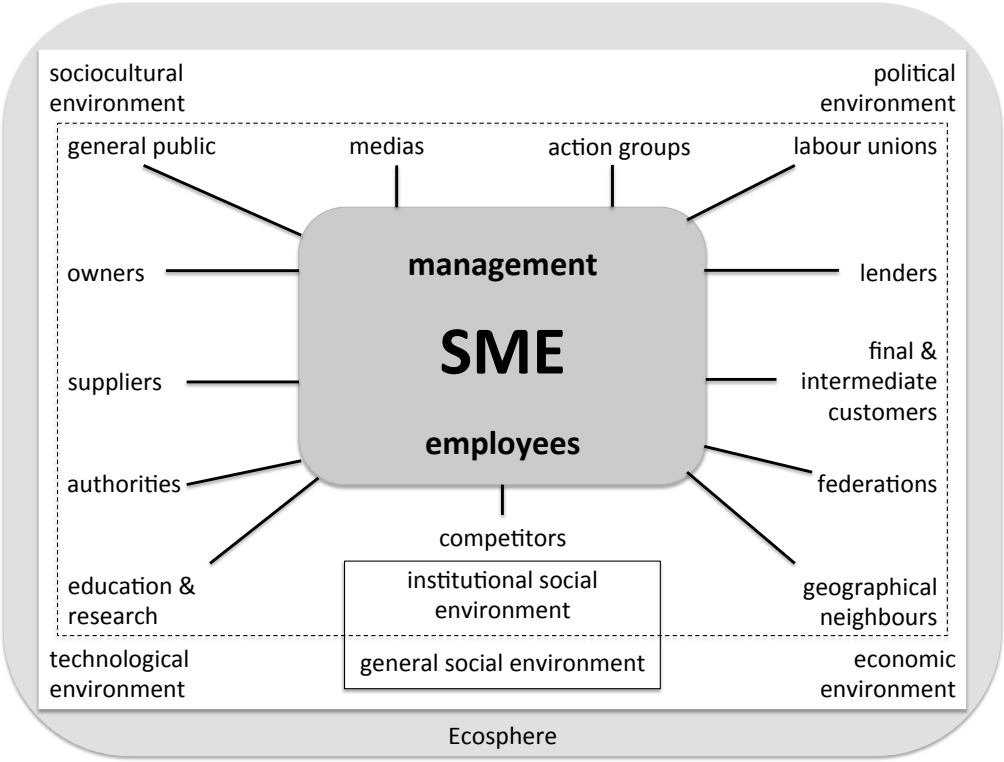

Figure 3: SMEs' stakeholders[6]

If the stakeholders of a company have to be considered, the shareholders have an important role. In the case of SMEs, the number of owners is often limited. Furthermore, the shareholders often have private relationship, e.g. they are members of the same family. However, often shareholders are not just the owner of a SME as they often also manage their company. This leads to a situation that the company is often considered as part of the personal life (Jamali, Zanhour, & Keshishian, 2009; Jenkins, 2004).

The next stakeholder group is authorities, also called state. This stakeholder can be distinguished into several institutions on several levels. The multi-level governance concept fragmented the contact institutions for SMEs. Nevertheless, the different authorities can affect the behaviour of SMEs through regulations, laws etc. (Hooghe & Marks, 2003). However, it seems to be difficult for the state to control the environmental performance in an effective manner due to by the high amount of SMEs (N. Gunningham, 2002).

Another stakeholder group is the one of lenders. In general the amount of potential investors is less for SMEs than for bigger companies. Nowadays, these investors also have an interest in the environmental performance of companies as it is seen as a responsible attitude. This responsible acting becomes even more important if socially responsible investors are considered as they do not invest in companies without social or environmental goals (Jenkins, 2004).

A fourth important stakeholder group is the employees. As SMEs often have troubles to acquire and keep high performer as employees, they have to pay a lot more attention to them (Jenkins, 2006). Often, their relationship with them is characterized as interpersonal with a 'care'-attitude (Jamali et al., 2009).

[6] (based on Schaltegger & Sturm, 2000, p. 9; translated by author)

Customers are another main stakeholder group. SMEs' customer base is often characterized by the absence of end customers and by a small customer base. This makes them dependent from one strong big company in a supply chain (Jenkins, 2004).

The absence of SMEs on the retail market and their size reduces the importance of other stakeholders. Whereas, nowadays, the press or NGOs often monitor environmental activities of bigger companies, this is not so much the case for SMEs. Nevertheless, these institutions can trigger pressure by monitoring the activities of a main customer. Also the local community does not pressure SMEs as there is a lack of knowledge of their activities (Jenkins, 2004).

In order to gain insights into the internal structures, the importance of the owner, the strategic apex, has to be acknowledged. The apex is both, the decision-maker and driver of implementation. Nevertheless, the apex needs his employees to implement his decisions in order to guarantee a long-term success. The employees become even more important, if the limitation of resources of any kind in SMEs is considered. Often, SMEs have to focus on their survival and the implementation of environmental friendly technologies or behaviour ties up additional financial, humanly and/or material goods (Jenkins, 2004). At first, they have to pay attention to their economic performance indicators, second to their legal performance, than to their ethical and finally to the discretionary performance (Jamali et al., 2009). Following this, activities to mitigate greenhouse gas emission is often seen as an investment against the economic survival and legal performance, if there is no immediate pay off (Jenkins, 2006).

However, often environmental activities in SMEs are notable, but they are not considered and/or claimed as these. This happens because their origin is not a better public image (Jenkins, 2006). Often the reason is based on the 'care'-attitude towards their employees, which is based on the personal relationship with the decision-maker (Jamali et al., 2009).

4.2 Motivation to participate in climate change mitigation programs'

There can be several reasons for SMEs to participate in climate change mitigation programs. The following paragraphs introduce a broad variety of reasons; starting with business, or objective, motivations and ending with normative reasons. Table four gives an overview over the motivations.

Table 4: Motivation of SMEs to participate in climate change mitigation

Category	Reason
Selling market	Customer demands
	Positive image
	Strategy implementation
	Create new market opportunities
Employment	Better working conditions
	Employees' demands
	New employees
Regulations	Prevent regulation
	Access to subsidies
Internal management	Process optimization
	Safe costs
	Predictable costs
	Access to lenders
	Protection of possession
Normative reasons	Local climate change
	Local environment
	Local health
	Global environment
	Global climate change
	Religious reasons

4.2.1 Selling Market

As already mentioned, investments of SMEs in greenhouse gas mitigation have to pay off, preferable in a short term, because it reduces the resource capacities to guarantee the survival of the company. Consequently, it is not surprising that a consideration of the objective reasons for investments in this field starts with the market. As already described above, SMEs often do not operate on end costumer markets and are members of a supply chain. Within this supply chain, they are often dependent on one key customer (Jenkins, 2004).

Following this situation Masurel (2007) identifies the demands of customers as one market driven reason to invest in greenhouse gas mitigation. Often the Corporate Social Responsibility (CSR)-strategy of a key client forces SMEs to be active as well. So, it can be considered that they are active to satisfy the demands of the market expectations (Jenkins, 2006). As the customer is focused on the products, this might not include activities of production conditions as insolation of the factory or low-energy technology for computers.

Another reason to invest in climate change mitigation might be the positive impact on the image of a company or a brand (Masurel, 2007). Whereas this is often a reason for bigger companies to pay attention to environmental issues and to advertise these activities, it can be assumed that this is not the case for SMEs. Reasons for this are that SMEs sell less to end customers and positive image is not as important on the supply chain market. Furthermore, SMEs often don't have a brand which they could protect (Jenkins, 2006).

It is also possible to express the values, visions or a strategic direction of a company by mitigation greenhouse gases (Masurel, 2007). In this case, the mitigation might be part of a CSR-strategy. CSR, according to the European Commission (2001, p. 4), is "a concept whereby companies decide voluntarily to

contribute to a better society and a cleaner environment". However, because of lacking resources and opportunities of long-term planning (Wieland & Schmiedeknecht, 2010), this is unlikely.

The last market driven reason for climate change mitigation is to create new market opportunities (Masurel, 2007). This can be done either by adding customers, who require low greenhouse gas emission, or fulfilling a market niche. Especially the market niche becomes likely through the potential of SMEs to step into unknown markets reasoned by their high flexibility (Jenkins, 2006). Another opportunity is to target an already known group and acquire them as customer. Finally, climate change mitigation can lead to publicity by media reports, it is also an useful advertising instrument (Weber, 2008).

4.2.2 Employment

Another reason for SMEs to invest in greener conditions of productions can be to create a better working environment for their employees. As greenhouse gasses often have a negative impact on the health of the employees, the 'care'-attitude of SMEs leads to mitigation of this impacts (Jamali et al., 2009).

As employees expect their companies to face environmental issues, this is another reason for SMEs to mitigate climate change (Masurel, 2007). Stakeholders, including employees, have expectations about companies' behaviour and their role in the society (Dubielzig & Schaltegger, 2005). This includes activities in climate change mitigation.

The next point is also related to these expectations. Companies' activities beyond 'just'-business improve the motivation of the management and the employees (Masurel, 2007). Both are based on an improved reputation of the company. Other reasons for improved motivation might be the better working environment based on health improvement or the perception of having an impact on companies' decisions. This is the case if the program is based on employee consultation (Weber, 2008).

The last employment reason is the attraction of employees. To 'green' a company or a job vacancy increases the likelihood of high skilled applicants (Renwick, Redman, & Maguire, 2013). As SMEs often struggle to attract high skilled employee (Holden, 2007), this is a valuable mean to attract them.

4.2.3 Regulations

Another motivation can be based on regulations. As other companies, SMEs have to face an increasing amount of environmental regulations, laws and commitments. For this reason, companies tend to perform better than the requirements. The idea behind this is that the over performance prevents more regulations (Masurel, 2007). However, SMEs barely caught the attention of governmental organizations (N. Gunningham, 2002) or have the attitude of long-term strategic thinking and acting (Wieland & Schmiedeknecht, 2010). Through this, it is unlikely, that they try to prevent long-term regulations this way.

Another kind of governmental market regulations is subsidies. These subsidies can be a motivation for SMEs to participate (Masurel, 2007). It becomes an important point, if the boundaries' of investment and the financial situation of SMEs' are considered (Jenkins, 2004).

4.2.4 Social responsibility

A SME can also be forced to act socially responsible by the public. In this case, a moral duty can be considered as business decision (Masurel, 2007) as inactivity would be synonymous to a loss of image, customers etc. In contrast to the above-

mentioned reason to improve the image, moral duty can be considered as re-activating and image protecting.

As another reason based in social responsibility the lead in this field can be considered. This lead can be based either on economic or technical innovation (Masurel, 2007).

4.2.5 Internal management

From an internal management perspective techniques, lowering the greenhouse gas emission, can lead to a cleaner workplace. Furthermore, process optimizing can also lead to a clearer and safer workplace structure, (Masurel, 2007).

Another opportunity is to safe costs (Masurel, 2007), especially in a long term. This might particularly be the case, if resources as coal and oil are substituted with resources with lower greenhouse gas density such as gas or regenerative energy sources. In Germany, for example, the costs for heavy fuel oils increased by 409.1% from 1995 until 2012 whereas the costs for natural gas just increased by 184.7% in the same period (Bundesministerium für Wirtschaft und Technologie, 2013).

A third reason to mitigate greenhouse gasses might be the predictability of costs. As shown by Pindyck (2003) the volatility of natural gas is lower than the volatility of oil.

A fourth internal management reason is the access to additional funding opportunities by access to more lenders. As some investors require ‘green’ certificates or EMSs, this enables SMEs to generate investments from additional investors. However, these are not just requirements of some ‘green’ investors; also traditional investors require such information (Weber, 2008).

The last internal management reason is the protection of the company itself and its distribution means. The threats of climate change are especially important to SMEs because of a “lack of planning, vulnerability to cash flow interruptions, lack of capital for recovery, ineffectual interactions with national agencies, infra-structure problems, individual attitudes and organisational culture, access to expertise, business sector and perceived exposure to risk” (Ingirige et al., 2008, p. 584). Furthermore, they are often unable to insure their potential losses (Ingirige et al., 2008). This raises the importance for SMEs to adapt to climate change effects such as storm surges, droughts etc.

4.2.6 Local climate change

Another reason to reduce the greenhouse gas emission might be found apart from entrepreneurial thinking and acting. Normative reasons are based on the beliefs and values of the company, its staff, especially the managers, or its owner. The importance of this reason becomes clear if it is considered, that decisions in companies are based on subjective and intersubjective values. If the values go beyond business activities, the decisions go beyond as well (Schaltegger & Sturm, 2000, p. 18). However, as these values are not only subjective but also intersubjective, they can not be considered as totally detached from other stakeholders (Neil Gunningham, Kagan, & Thornton, 2004; Schaltegger & Sturm, 2000, p. 18).

As already described, climate change can lead to a locally increased frequency and strength of heat waves and droughts. Another aspect is the arise of heavy rainfall and a rise of the sea level (Revi et al., 2014). Following this, the prevention of local effects of climate change can be a reason for companies’ activities.

4.2.7 Local environmental and health protection

Protecting the local environment can be one normative reason for companies to mitigate their greenhouse gas emission. Mostly, these reasons are based on own experiences and local media (Moser & Tribbia, 2006). Additional, national media can also increase the awareness of local issues, if they report on national issues (Sampei & Aoyagi-Usui, 2009).

Anthropogenic emission of the greenhouse gas NO_X occurs through the combustion of fuel or biomass and production processes. Apart from the possible effects on climate change, this gas can also cause effect the environment. A high nutrient concentration can lead to damages of the local flora. Moreover, this emission can cause an acid rain, which can affect the environment beyond the local. This acid rain is also harmful for the human health as it leads to an acidification of lakes and rivers (Constantionos et al., 2010a, p. 47).

Non-methane Volatile Organic Compounds are one cause of ground-level ozone. Volatile Organic Compounds, as methane, are mainly emitted by the agriculture sector. Transportation, industrial processes and organic solvents cause non-methane, as benzene, xylene, propane and butane. The ground-level ozone is harmful for the vegetation, fauna and human beings (Constantionos et al., 2010a, p. 47).

Apart from these emission related issues, local climate change, as described in 3.3.1 can also lead to local environmental and health damages. The increased average temperature, arisen of heat waves and an increased, can lead to heat-related problems and higher mortality rates, because of infectious diseases and wide temperature ranges within a short space of time (Patz, Campbell-Lendrum, Holloway, & Foley, 2005). The droughts and the rainfalls can arise water-related diseases. And finally, the rise of the sea level leads to erosion on the coast and on rivers, more storm surges, which affect for population, coastal vegetation, ecosystems and property (Constantionos et al., 2010a, p. 47).

Furthermore, the climate change can have an impact on local animals and their habits. Some species adapt their behaviour; others disappear in their natural regions or appear in regions were their could not be found before (Parmesan, 2006).

4.2.8 Global environmental protection

Another normative motivation can be found in the global climate change discussion. NGOs and mass media run strong campaigns in the past in order to strengthen the awareness of climate change related problems. Therefore, NGOs use strong pictures of protected species in order to transfer the scientific knowledge to the general public. The media also presents these pictures as the NGOs are well connected with them (Hall & Taplin, 2007). With this strategy, they are able to reach nearly every part of the society, and in line with that, all kinds of companies. Furthermore, they inform the majority of a country about climate change related issues in other parts in the world (Sampei & Aoyagi-Usui, 2009).

4.2.9 Religious and ethics reasons

The last reason to mitigate greenhouse gas emission can be found in religion. As shown by Vives (2006), this is an important reason for SMEs. The reason for the importance is that they can affect discussion through opinion-leaders and influence the broad majority through their directives (Posas, 2007). Nevertheless, it has to be acknowledged that these interpretations are mainly based on the opinions of environmentalists and are not representative for the entire religious community of each religion.

If we consider the Christian directives, it can be interpreted that an ecological side is added to the economy. The planet as kingdom of God introduces creatures as representatives of God. Following this, it is not allowed to treat them badly. Furthermore, every human is dependent on God's mercy and judgment. With this in mind, it follows, that the nature has to be treated sustainably (McFague, 2001).

The Jewish ideal of tikkun olam, which means repair the world, claims justice for everything on God-given land. This ideal also applies for the physical environment and other species. Furthermore, the land offers the basic needs to its' inhabitants, but just, if they are aware of justice toward this land, otherwise, the benefits will be removed (Tirosh-Samuelson, 2001). Following this, the effects of greenhouse gas emission on the nature are not acceptable as it risks the re-movement of the God given benefits of land.

The Islamic religion describes the humans as the best of God's creatures. Nevertheless, they're not allowed to use this status to exercise power over it, it rather means that they are responsible for their acting in relation to each other and nature. Furthermore, nature is seen as something, which is required for human live and, following this, it has to be protected (Haq, 2001).

For Hindus their body has an organic connection to the earth, as it is a goddess. Due to this, the flora, the fauna and the earth itself are not allowed to be destroyed by humans (Narayanan, 2001).

Buddhist environmentalists have a special relationship to forests as Buddha's' enlightenment took place under a tree. Following this, they see nature as the basis of humans' flourishing. Furthermore, they see interdependence between nature, humans and enlightenment (Swearer, 2001).

4.3 Conclusion

The chapter gave an overview about the decision-making environment and the motivation of SMEs to participate in municipal climate change mitigation programs. The overview about SMEs' decision-making environment revealed, that SMEs' motivation is not independent; it is based on their inter-subjective relations with stakeholders in their ecosphere.

In a next step, potential motivations of SMEs to participate in municipal climate change mitigation projects have been introduced. The motivation of SMEs can be based on the selling market, actual or future employees, governmental regulation policy, internal management benefits or on normative reasons. These motivations will be used in the sixth chapter to identify a connection between the motivation of SMEs to participate in municipal climate change mitigation mobilization strategies and the design of such a program.

5 Research Method

After the theoretical background of the research has been set, this chapter will provide a look into the research method. In general, the research requires two different kinds of data. The characteristics of the programs for climate change mitigation in the context of the 'UmweltPartnerschaft' are the first required data set. The second set investigates the motivation of the participants. To identify a potential connection between these two data, a statistical connection will be tested.

5.1 Research method characteristics' mobilization strategies

The data required to characterize the programs for climate change mitigation are qualitative. This qualitative data are developed through the employees of the city as they develop the mobilization strategies. The design of each program can be either

provided through the people who developed the program, through people who deal with the program in their daily work or through documents describing the programs.

For this research, the data has been accessed through funding guidelines and brochures. The reason for this is, that a subjective interpretation of a professionally involved person can be ruled out. Additionally, the funding guidelines can be considered as 'hard' as they are standard procedure descriptions. Through their standardizing character, they are independent from individual applications as the investment bank is not able to generate a cash flow if the requirements in the description are not met.

The 'UmweltPartnerschaft' consists of 19 different mobilization strategies (figure four). The high amount of different programs allows a broad variety of characteristics for programs in a geographically small area. The local limitation of the strategies on the area of the City of Hamburg lowers locally dependent influences on the programs, the companies and their motivation. Moreover, the impact of different cultural backgrounds on the perception of the characteristics by the companies is mitigated.

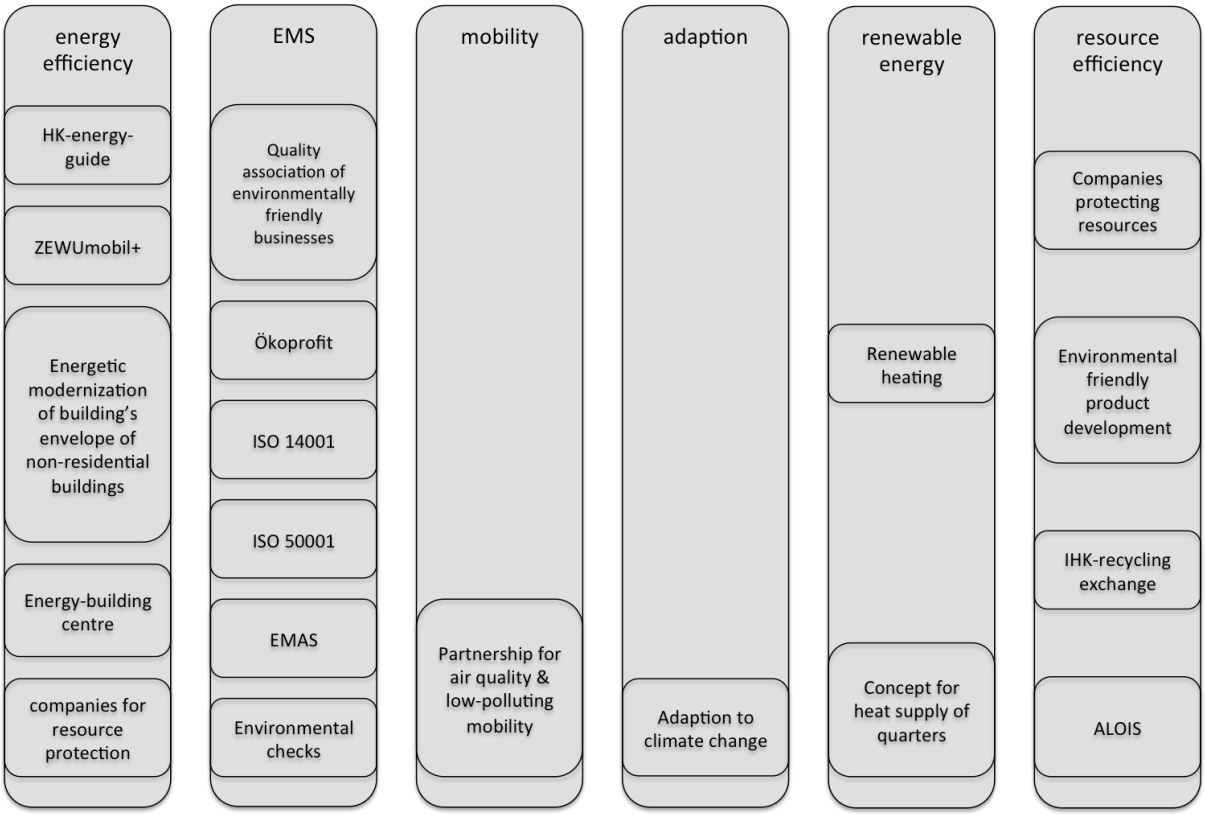

Figure 4: Programs for SME mobilization of 'UmweltPartnerschaft'

5.2 Research method for SMEs' motivation

The motivation of SMEs is represented by qualitative data. Internal stakeholders, e.g. owners or employees, can provide this information. In general, it can be assumed that an internal stakeholder with decision-making authority has a high significance. However, in case of SMEs other members also can provide such information as information flows easily from top to down (Jenkins, 2004).

In order to investigate the reasons to participate two approaches are possible. Option one is an interview and option two is a survey. Whereas the interview allows the researcher to get a broader understanding of the motivation of the investigated companies, the applied approach of questionaries' allows asking more participants. Furthermore, standardized data can be created easily, which allows to transfer

qualitative data into quantitative ones (Evans & Mathur, 2005). For this research an online-based questionnaire has been used.

The questionnaire (see appendix 1) starts with questions, which characterize the SMEs and the relation of the respondent towards the company. These data allow being more précised in the interpretation of the research. Through these data, it is possible to see the limitation of the representativeness of the collected data in relation to SMEs in general.

On the third page the programs are identified, the SME participated in. The indication of the programs determined the followed questions about the motivation of the SMEs to participate in each program.

It has to be acknowledged, that a SME can have multiple reasons to participate in a climate change mitigation program. For this reason, it is possible for the companies to name several motivations for each program.

To identify the motivation of SMEs' to participate in climate change mitigation programs the 'UmweltPartner' of Hamburg has been chosen. 'UmweltPartner' are economic organizations, which participated in the project 'UmweltPartnerschaft' of the City of Hamburg. Furthermore, they have to be especially engaged in the programs. Following this, being an 'UmweltPartner' could be considered as an eco-label. During the ten years of the program, 955 legal entities received this label (Hamburg.de, 2014). The legal entities are companies from various sizes, foundations and associations. From these 955 legal entities, 144 do not meet the criteria of a SME as presented in paragraph 2.2.1. Following this, the population of the research consists of 811 entities, which can be considered as pre-defined target group. The invitations to the survey have been sent via mail. Through these characteristics the survey can be considered as a probability-based mail survey (Andrews, Nonnecke, & Preece, 2003).

6 Data

In this chapter, the generated data will be presented and prepared for the analysis. Therefore, the sample will be described, the programs will be analysed towards their characteristics and a statistical connection between the motivations of the participants and the characteristics of the programs will be proofed.

6.1 Description of the sample

In total 81 enterprises participated in the research. With the above-mentioned population of 811, the sample corresponds to a share of 9.99%. As shown in table five, 18 (22.2%) companies can be considered as small companies through their legal entity and 63 (77.8%) as medium sized. This means, that the results of the research are rather significant in relation to medium sized than small enterprises. If the number of employees defines the size of a company according to the earlier mentioned definitions of the EU, 26 (32.1%) companies are micro enterprises, 37 (45.7%) are small sized and 14 (17.3%) are medium sized. If considered the definition of the USA, four additional companies (4.9%) meet the criteria of a SME. The legal form and the number of employees lead to the situation that companies participated, which have rather mature organisational structures than immature. Following this, the analysis is rather significant for such companies.

Table 5: Distribution of size of company

Legal form	Frequency	%	Number of employees	Frequency	%
small enterprise	18	22.2	<10	26	32.1
			<50	37	45.7
medium enterprise	63	77.8	<250	14	17.3
			<500	4	4.9
Total	81	100.0	Total	81	100.0

Another opportunity is to describe the sample among the economic sector. As shown by table six 0 participant can be aligned to the primary economic sector, 28.4% can be aligned to the secondary, 51.9% can be aligned to the tertiary sector and 19.8% can be aligned to the quaternary sector. Following this, the data are significant for companies within the service sector (tertiary and quaternary sectors) and not for the primary sector, which includes agriculture and material extracting companies.

Table 6: Distribution of economic sector

Economic sector	Frequency	%
Primary	0	0
Secondary	23	28.4
Tertiary	42	51.9
Quaternary	16	19.8
Total	81	100.0

Table seven shows the distribution of the sample in relation to the question of the held position within the company. It has to be noticed, that this question has not been answered by all participants. Due to that, the sample size for this question is 80. However, most of the participants of the research are employees (30.9%). Additional 9.9% of the participants are employees with a focus on sustainability. In bigger companies, this would reduce the significance of the data. In the case of SMEs, the data stay reliable as the information and reason about proceeded decision are not just available to the management, but also to regular employees (Jenkins, 2004). Nevertheless, the majority of the participants have decision-making authority (owner & CEO: 22.2%, CEO: 1.3%, share holder: 14.8%, share holder & CEO: 1.2% and upper management: 2.5% and with focus sustainability: 6.2%).

Table 7: Distribution of position held within the company

Position held within the company	Frequency	%
Owner & CEO	18	22.2
CEO	1	1.3
Employee with focus sustainability	8	9.9
Share holder	12	14.8
Owner	8	9.9
Upper management with focus sustainability	5	6.2
Employee	25	30.9
Share holder & CEO	1	1.2
Upper management	2	2.5
Total	80	100

The amount of participated programs per company is another way to distinguish the participants. The 81 companies participated in 170 programs as most companies participated in more than one program. The mean of the number of programs a company participated in is 2.099 and the median is two. The minimum amount of programs a company participated in is one and the maximum is eight. Furthermore table eight shows that 33.3% of the companies participated in two programs and 17.3% in three programs. In the category of four, five and eight participated programs two (2.5%) companies can be identified per program. One company (1.2%) participated in seven programs and none in six. This distribution shows, that the majority of the participating companies try to reduce their impact on climate change in multiple ways. Due to this, it can be assumed, that the SMEs have strong ties to climate change mitigation and they might tend to have normative reasons. However, the majority of the companies (40.7%) participated in one program. For these companies, it can be assumed, that their commitment to climate change mitigation is not as strong as in the other categories. Furthermore, it is likely, that they do not mention normative reasons. Due to the combination of companies with and without strong ties, the mentioned motivation of the SMEs should be representative for all SMEs, which participate in municipal climate change mitigation programs.

Table 8: Distribution of sum of participated programs

Sum of participated programs	Frequency	%
1	33	40.7
2	27	33.3
3	14	17.3
4	2	2.5
5	2	2.5
6	0	0
7	1	1.2
8	2	2.5
Total	81	100

A final description of the sample is given by the distribution of the companies among the programs. The mean of companies per program is 9.444 and the median is 7.5. The minimum is 0 in the case of ALOIS and the maximum is 29 in the case of environmental checks. Further distributions of companies per programs are presented in table nine.

Table 9: Distribution sum of participants per program

Program	Number of participants	%
Adaption to climate change	9	5.3
Energy-building centre	15	8.8
ALOIS	0	0
EMAS	2	1.2
Energetic modernization of building's envelope of non-residential buildings	4	2.4
Renewable heating	8	4.7
IHK-recycling exchange	2	1.2
ISO 14001	8	4.7
ISO 50001	2	1.2

Program	Number of participants	%
Partnership for air quality & low-polluting mobility	16	9.4
Quality association of environmentally friendly businesses	6	3.5
Environmental checks	29	17.1
Environmental friendly product development	7	4.1
Companies protecting resources	28	16.5
Concept for heat supply of quarters	1	0.6
ZEWUmobil^{+}	3	1.8
Ökoprofit	19	11.2
HK-energy controller	11	6.5

6.2 Analysis of the programs

In this section each program will be analysed through the characteristics discussed in section 2.3. To identify the characters, a short description of the program will be given. It has to be acknowledged, that each dimension can have just one characterization through statistical reasons. The characterization can be found in the end of each description.

6.2.1 Energetic modernization of building's envelope of non-residential buildings

The program energetic modernization of building's envelope of non-residential buildings aims to improve the insulation of houses' facades. The aim is, to reduce the energy consumption for heating within the buildings. In line with this the production of CO_2 will be reduced. The program is designed for owners of buildings or natural and legal people with the decision-making authority. State owned or public companies buildings are excluded from the program. The monetary support is not just provided for the physical modernization, but also for energy consulting, the initiation of an energy review and the hiring of consultants in this sector. The subsidies themself will be provided by the Hamburgische Investitions- und Förderbank (Hamburg's Bank for Investment and Development). The maximum amount is 150,000 EUR per building if they are used for the modernization. The subsidies are 10% of the total investment costs. If the subsidies are used for energy consulting or an energy review, 50% (maximum amount 5,000 EUR) will be paid. In case of a small (+ 20%) or medium sized (+ 10%) companies the rate of support is increased. If a company wants to get access to the subsidies for energy consultation, they can receive 50% of the costs (maximal 5,000 EUR). The last opportunity is to receive money for insulation materials with the mark of quality RAL-ZU 132 respectively 140 or the natureplus-mark. In this case, 10 EUR per m^2 can be granted (Hamburgische Investitions- und Förderbank, 2014a).

Table 10: Characterization energetic modernization of building's envelope of non-residential buildings

Dimension	Characterization	Description
Target	Companies	For non-living houses
Mechanism	Financial support	Share of investment costs (e.g. subsidies for the modernization of the facade
Issue	Resources	Energetic modernization of the façade, Energy report DIN V 18599 and independent expert for the above things is supported
Orientation	Development	Improving of existing houses

6.2.2 Energy-building centre

The energy-building centre is a first-contact information centre for energetic related improvements. It provides information for already established and planed buildings. Information about installation engineering, facade and energy supply is provided. Owners and professionals can also get access to information about related incentives etc. (EnergieBauZentrum Hamburg, n.d.-a, EnergieBauZentrum Hamburg, n.d.-b).

Table 11: Characterization energy-building centre

Dimension	Characterization	Description
Target	Local community	House owners and professionals as architects, planer etc.
Mechanism	Informing	Initial information provided
Issue	Resources	Facade, heating system information
Orientation	Development	Existing buildings or existing plans

6.2.3 Companies protecting resources

The program 'Companies protecting resources' is for manufacturing and service companies, craftsman's establishments and other organizations. The program consists of approaches to reduce greenhouse gasses directly or through resource consumption. The amount of the provided funding is calculated on the basis of saved tones CO_2, tones of material or m^3 water per year. Companies can apply for the maximum amount of 100,000 EUR, which can be calculated based on the values of table twelve. The basis for the calculation of t CO_2 are for electricity 0.556 kg CO_2/kWh, for natural gas 0.201 kg CO_2/kWh and for heating oil 0.268 CO_2/kWh (Hamburgische Investitions- und Förderbank, 2014d).

Table 12: Calculation subsidies for companies protecting resources[7]

Technic	Point of reference	Point of reference
Other electric drives	≤ 40 t 500 EUR pro t CO_2	> 40 t 100 EUR pro t CO_2 + 16,000 EUR
Compressed air	≤ 20 t 800 EUR pro t CO_2	> 20 t 100 EUR pro t CO_2 + 14,000 EUR

[7] (Hamburgische Investitions- und Förderbank, n.d., p. 2; translated by author)

Technic	Point of reference	Point of reference
Cold	≤ 40 t 700 EUR pro t CO_2	> 40 t 100 EUR pro t CO_2 + 24,000 EUR
Combined heat and power unit > 20 KW (IT)	≤ 50 t 600 EUR pro t CO_2	> 50 t 60 EUR pro t CO_2 + 27,000 EUR
Heat generation	≤ 50 t 500 EUR pro t CO_2	> 50 t 30 EUR pro t CO_2 + 23,500 EUR
Heat recovery	≤ 50 t 500 EUR pro t CO_2	> 50 t 60 EUR pro t CO_2 + 22,000 EUR
Radiant heating	≤ 50 t 400 EUR pro t CO_2	> 50 t 30 EUR pro t CO_2 + 18,500 EUR
Ventilation	≤ 20 t 700 EUR pro t CO_2	> 20 t 100 EUR pro t CO_2 + 12,000 EUR
Saving of material	≤ 10 t 5,000 EUR pro t	> 10 t 50,000 EUR
Water	≤ 3,000 m^3 10 EUR pro m^3	> 3,000 m^3 0.4 EUR pro m^3 + 28,800 EUR
Integrated projects	120 EUR pro t CO_2	

Table 13: Characterization companies protect resources

Dimension	Characterization	Description
Target	Companies	Manufacturing and service companies, craftsman's establishment and other organizations
Mechanism	Financial support	Technic specific support as shown in table 7
Issue	Resources	Protecting resources
Orientation	Development	Improvement of existing technic

6.2.4 Environmental friendly product development

'Environmental friendly product development' is a program that supports innovation in relation to end consumer consumption. It is developed for single companies or cooperation projects of multiple partners, e.g. companies and research institutes. It is possible to get partial funding for projects, which aim to save resources and emissions through products, production processes or service improvements. Furthermore, the focus of the innovation project of the applying company should be resource efficiency of the production process, the use of recycled material or the degree of recyclability of used material. The funding can be provided for personnel and material costs, patents and external services. The maximum share of supported investment costs of a project is 80% and the sum is 500,000 EUR. For projects in the experimental development field, the share for enterprises with less than 50 employees is 45%; for companies with less than 250 employees it is 35% and for

enterprises with more than 250 employees it is 25% (Hamburgische Investitions- und Förderbank, 2014c).

Apart from the monetary support also consultation is provided. Additionally, the City of Hamburg offers access to various external consultants. Therefore, the City pays the costs of the consultants (Freie und Hansestadt Hamburg Behörde für Stadtentwicklung und Umwelt, 2014).

Table 14: Characterization environmental friendly product development

Dimension	Characterization	Description
Target	Companies	Companies, not further specified
Mechanism	Financial support	Funding for personnel and material costs, patents and external services
Issue	Resources	Focus on resource efficiency within the production process, the use or the degree of reusable material
Orientation	Substitution	New products or production process

6.2.5 IHK-recycling exchange

Whereas the recycling exchange stock of the German Commercial and Industry Chamber is not provided by the City of Hamburg, it is still listed in the promotion documents about the program 'UmweltPartnerschaft'. This exchange informs companies about the possibility to purchase or sell recyclable material (Geschäftsstelle UmweltPartnerschaft Hamburg, 2013).

Table 15: Characterization IHK-recycling exchange

Dimension	Characterization	Description
Target	Companies	In general everybody; through the German Commercial and Industry Chamber as offering institution specifically for companies
Mechanism	Informing	Promotion of external offer
Issue	Resources	Establishment of recycling market
Orientation	Awareness	Use of recycled materials

6.2.6 Soil, rubble and component exchange ALOIS

'ALOIS' is comparable program to the 'IHK-recycling exchange' as it is also, a stock exchange. However, 'ALOIS' is an exchange for soil, rubble and components. The provinces Hamburg, Hessen, Rhineland-Palatinate and North Rhine-Westphalia host 'ALOIS', but it is run by the German Commercial and Industry Chamber. Whereas the provinces offer the exchange for all natural and legal entities (Landesamt für Natur Umwelt und Verbraucherschutz Nordrhein-Westfalen, n.d.), the City of Hamburg addresses just companies (Geschäftsstelle UmweltPartnerschaft Hamburg, 2013).

Table 16: Characterization "ALOIS"

Dimension	Characterization	Description
Target	Companies	Companies are addressed
Mechanism	Informing	Promotion of external offer
Issue	Resources	Establishment of recycling market
Orientation	Awareness	Use of recycled materials

6.2.7 Renewable heating

The program 'Renewable heating' aims to reduce the consumption of non-renewable energy sources. Therefore, financial support is provided for the installation of solar thermal energy systems and the replacements of heating systems. Furthermore, the program supports the use of bioenergy and heat grids. The funding can be provided to landowners, companies and comparable organizations. In detail, funding is provided for following solar thermal and heating system related constellations:

- Existing residential buildings
  - heat supporting systems of detached and semidetached houses
  - hot water installations of buildings with at least three flats
  - installations which feed into the heat grid, if their focus is a house
- Existing and new non-residential buildings
  - installations for process heat and/or cold
  - installations which feed the heat grid
- Existing non-residential buildings
  - heating or warm water supporting installations which feed the heat grid, if their focus is an existing building
- Solar heating monitoring for new solar thermal systems

The subsidy for the solar thermal systems is 100 EUR/m^2 entry surfaces of the collectors. If the collectors' surface is more than 200 m^2, the level of the subsidies will be decided individually. The support for the monitoring is 1,750 EUR for installations with an aperture area between 20 and 100 m^2 and 2,600 EUR if the aperture area is between 100 and 200 m^2. For installations with a bigger aperture area the amount of subsidies will be decided individually. The replacement of the heating system with a wood pellet heating system can be supported with at least 1,500 EUR and at most 7,500 EUR. Therefore, 90 EUR/m^2 will be provided. If the system is replaced with a natural gas heating, an oil heating or a heat pump, the provided funding is between 1,000 and 5,000 EUR with a calculation basis of 60 EUR/m^2. In the case of bioenergy and the heating grid, automatic systems with at least 100 kW can be supported. Therefore, 45 EUR/kW for wood pellet or wood chip heating systems can be provided. If the installation has more than 500 kW, the subsidies can differ. Furthermore, following values (with 11% oxygen) are the allowed maxima:

- Dust: 40 mg/Nm^3
- CO: 150 mg/Nm^3
- All kinds of C: 10 mg/Nm^3
- NO_x: 250 mg/Nm^3

It is also possible to get subsidies for vegetable oil cogeneration power stations biogas plants with a direct connection between the biogas production and use. In this case, the level of the subsidies is decided individually but it is at least 600 EUR. This minimum level is also applied for local heating grids' conversion units and distribution systems. The total amount is given by the length of the grid as 30 EUR/m will be provided (Hamburgische Investitions- und Förderbank, 2014b; Köhler, 2012).

Table 17: Characterization renewable heating

Dimension	Characterization	Description
Target	Local community	partly for residential, partly for non-residential and partly for all kind of houses
Mechanism	Financial support	Project dependent monetary support
Issue	Resources	Heating related resources
Orientation	Development	Replacement of heating system or parts of it

6.2.8 Concept for heat supply of quarters

The City of Hamburg uses also their concept of quarter development to motivate SMEs to participate in climate change mitigation. Among other aims, 'RISE', a framework for integrated district development, wants to integrate the dwellers in the process of infrastructure improvement through decentralization of the energy and heat production. In this case, dwellers include all kinds of natural and juristic persons. Financial support can be provided in case of unprofitable investment costs, investment preparation and supporting costs. Additional, support can be provided for non-investments over a period of seven years as long as they are considered as start-up furtherance. In general, the funding can cover up to 50% of the costs for a project. However, in some cases even up to 100% of the costs can be provided. The aim of the funding is to improve existing structures and infrastructures in order to increase the quality of life (Amt für Wohnen, Stadterneuerung und Bodenordnung, Abteilung Integrierte Stadteilentwicklung, 2013).

Table 18: Characterization concept for heat supply of quarters

Dimension	Characterization	Description
Target	Local community	dwellers
Mechanism	Financial support	Subsidies for investment and non-investment costs
Issue	Resources	Heat production
Orientation	Development	Improving existing structure and infrastructure

6.2.9 Partnership for air quality & low-polluting mobility

Based on the mutual agreement between the Ministry of Urban Development and the Environment, the Ministry of Economy, Transport and Innovation, the Chamber of Commerce Hamburg and the Chamber of Crafts Hamburg the parties agree to increase the awareness for the subject of air quality within the local economy and population. Furthermore, they agree to increase the communication of the subject low-polluting mobility (Behörde für Stadtentwicklung und Umwelt, Behörde für Wirtschaft Verkehr und Innovation, Handelskammer Hamburg, & Handwerkskammer Hamburg, 2012). As part of this agreement the City of Hamburg provides advices for companies to reduce their traffic related air pollution. The advices are:

- providing information about the public transport
- offering the payment of passes for the local transport
- improving the facilities for bikes
- triggering carpooling and car sharing
- replacing company cars with low-emission cars
- installing particle filters
- applying a management system for the fleet (Behörde für Stadtentwicklung und Umwelt, 2012)

Table 19: Characterization partnership for air quality & low-polluting mobility

Dimension	Characterization	Description
Target	Companies	Agreement with chambers
Mechanism	Informing	Subsidies for investment and non-investment costs
Issue	Transport	Low-polluting mobility
Orientation	Awareness	Increase the awareness by providing advices

6.2.10 Quality association of environmentally conscious businesses

The program 'Quality association of environmentally friendly businesses' is an environmental and quality management system for small sized handcrafts and commercial companies. The aim is to reduce the waste, the wastewater production and the operation resources consumption. Furthermore, environmental law consultation can be provided. Therefore, experts visit the companies and provide a tailor-made strategy to improve the companies' performance. The costs for the audit are dependent on the size of the company (Behörde für Stadtentwicklung und Umwelt, n.d.).

Table 20: Characterization quality association of environmentally conscious businesses

Dimension	Characterization	Description
Target	SME	Small sized handcrafts
Mechanism	Consultation	Experts provide tailor-made advices
Issue	Resources	Reduce of waste and wastewater and operation resources consumption
Orientation	Monitoring	Audit and management system

6.2.11 'Ökoprofit'

'Ökoprofit', an ecological program for integrated environmental technology, is a club managed by the City of Hamburg. The club provides management systems for ecological optimization of companies. Furthermore, the club offers a platform for knowledge exchange between companies. Therefore, the members themselves set the agendas for meetings and the City covers the costs. The aim is to reduce the impact of the companies on the environment by reducing waste and resource consumption. Apart from the ecological aspect, the companies try to reduce their operating costs (Geyer, 2011). The primary target of this program is medium sized companies (Behörde für Stadtentwicklung und Umwelt, 2013).

Table 21: Characterization 'Ökoprofit'

Dimension	Characterization	Description
Target	SMEs	Primary objective medium sized companies
Mechanism	Consultation	Management system
Issue	Resources	Reduce of waste and wastewater and operation resources consumption
Orientation	Monitoring	Audit and management system

6.2.12 ISO 14001

ISO 14001 is another EMS. However, whereas the target group of the prior one was small, mostly local acting companies, the ISO 14001 aims international acting companies. The reason for this difference is, that ISO 14001 is a certification with international standards. Following this, it offers a benefit to companies in all national markets as they can advertise with the certification everywhere. To increase the amount of companies, which implement a management system and apply the ISO 14001, the City of Hamburg provides information related to the implementation (Behörde für Stadtentwicklung und Umwelt, 2013). The specific aim of the ISO 14001 is that the applicant fulfils legal environmental requirements and monitors and

improves their environmental performance ("ISO 14001:2004 - Environmental management systems -- Requirements with guidance for use," 2008).

Table 22: Characterization ISO 14001

Dimension	Characterization	Description
Target	Companies	International acting companies
Mechanism	Informing	Information about the implementation
Issue	Climate change	Improve general environmental performance
Orientation	Monitoring	Audit and management system

6.2.13 ISO 50001

The ISO 50001, or in Germany previously known as DIN EN 16001, is comparable to the ISO 14001 in one main aspect. As the ISO 14001, the ISO 50001 targets internationally acting organizations through an international standardization. However, whereas the ISO 14001 targets all sizes of companies, the ISO 50001 targets middle and large sized ones (Behörde für Stadtentwicklung und Umwelt, 2013). Additionally, the focus is more specific as the ISO 50001 focuses on the consumption of electric energy ("ISO 50001:2011 - Energy management systems -- Requirements with guidance for use," 2011). To trigger the participation of companies in this program, the city suggests the guideline of the Federal Ministry of the Environment, Nature Conversation and Nuclear Safety. Moreover, information about potential financing opportunities is provided (Behörde für Stadtentwicklung und Umwelt, 2013).

Table 23: Characterization ISO 50001

Dimension	Characterization	Description
Target	Companies	Medium and large sized companies
Mechanism	Informing	Providing of a guideline
Issue	Energy	Focus on consumption of electric energy
Orientation	Monitoring	Audit and management system

6.2.14 EMAS

'EMAS', the Eco-Management and Audit Scheme based on EU-Regulation 1221/2009, is another EMS. 'EMAS' aims to improve the environmental performance of organizations by on-going monitoring of relevant environmental performances. Furthermore, organizations have to publish their environmental key performing indicators and start a dialogue about them with their stakeholders. The member states of the EU are responsible for organizational aspects of 'EMAS' (European Parliament and the Council, 2009). In Germany, this responsibility is shifted from the federal state to the local level. Due to this responsibility, the City of Hamburg has to manage this EMS ("Umweltaudit - EMAS Hamburg," 2014). Whereas 'EMAS' in general offers small companies the opportunity to apply it (European Parliament and the Council, 2009), Hamburg indicates medium and large sized (Geschäftsstelle UmweltPartnerschaft Hamburg, n.d.), international oriented (Behörde für Stadtentwicklung und Umwelt, 2013) companies as its target group.

Table 24: Characterization EMAS

Dimension	Characterization	Description
Target	Companies	Medium and large sized companies with international orientation
Mechanism	Eco-labelling	Manages organizational aspects of an EMS
Issue	Climate change	General environmental performance
Orientation	Monitoring	Audit and management system

6.2.15 Adaption to climate change

To trigger adaption to climate change by companies the City of Hamburg informs them about possible developments and related consequences. Additionally, the City also provides information about potential subsidies of other organizations such as the federal state or the EU. This information is provided on events organized by science organizations like 'KLIMZUG-NORD' or the members of the Northern German Climate Office (Norddeutsches Klimabüro) (Behörde für Stadtentwicklung und Umwelt, 2013).

Table 25: Characterization adaption to climate change

Dimension	Characterization	Description
Target	Companies	Not further specified
Mechanism	Informing	Information about the consequences of climate change and funding opportunities
Issue	Adaption	Possible subsidies for adaption
Orientation	Awareness	General information and possible solutions

6.2.16 HK-Energy-Controllers

The program 'HK-Energy-Controllers' (HK-Energie-Lotsen) is run in cooperation with the Chamber of Commerce Hamburg. Whereas the Chamber offers the expertise, the City pays the costs. This program offers consultation for SMEs to reduce their electric energy consumption. Therefore, consultants develop a tailor-made advice for the company to improve their performance and lower the operating costs (Chamber of Commerce Hamburg, n.d.; "Energiekosten im Unternehmen senken - Handelskammer Hamburg," n.d.).

Table 26: Characterization HK-Energy-Controllers

Dimension	Characterization	Description
Target	SMEs	SME specifically named
Mechanism	Consultation	Consultants develop tailor-made plans
Issue	Energy	Electric energy consumption
Orientation	Development	Improvement of actual infrastructure

6.2.17 ZEWUmobil^{+}

As the 'HK-Energy-Controllers', the 'ZEWUmobil^{+}' is cooperation project with a chamber; in this case it's a cooperative project with the Chamber of Crafts Hamburg. However, it is not just the Chamber that is different. Whereas the focus of the 'HK-Energy-Controllers' is just electric energy, in this case the focus is resource and electricity efficiency. Additionally, consultants are also able to offer knowledge about mobility related issues. However, the focus of the program is resource consumption

(ESF-Projekt ZEWUmobil+, n.d.). The target group of this project is SMEs (Geschäftsstelle UmweltPartnerschaft Hamburg, n.d.).

Table 27: Characterization ZEWUmobil+

Dimension	Characterization	Description
Target	SMEs	SME specifically named
Mechanism	Consultation	Consultants develop tailor-made plans
Issue	Resources	Resource consumption
Orientation	Development	Improvement of actual infrastructure

6.2.18 Environmental checks

The 'Environmental checks' can be considered as a start-up program for crafts with at most 50 employees. The participating companies get a checklist, which has been specified for each sector of economic activities. The checklist, which has been developed by the Centre for water and environmental technique of the Chamber of Crafts Hamburg, identifies the actual environmental performance of the company and serves as a base for further improvement. To enable the companies to improve, the checks suggest further programs of the 'UmweltPartnerschaft' and offer tailor-made ideas for improvement. The checks discuss subjects from the fields' waste, water, fleet, energy and environment-conscious management. However, the focus of the program is the consumption of resources (Hamburg.de, n.d.).

Table 28: Characterization environmental checks

Dimension	Characterization	Description
Target	SMEs	Crafts with at most 50 employees
Mechanism	Consultation	Tailor-made ideas for improvement
Issue	Resources	Resource as focus
Orientation	Development	Improvement of actual infrastructure

6.3 Preparation of the analysis

To enable a further analysis of the data, the questionaries' data have to be aggregated first. Through the output of the motivation on a nominal scale (yes=1, no=0), the absolute frequencies of each reason for each program $n(y_{.j}) = n_{.j}$ (x participant; y motivation) can be calculated. Therefore, the column totals for each reason in each program have to be calculated via the formula below. It also has to be acknowledged that the scale of the column totals is not nominal; it is rational. A visualization of the calculation is given by figure five.

$$\sum_{i=1}^{k}(n_{.j}) = n_{1j} + n_{2j} + n_{3j} + \cdots + n_{kj}$$

	$Reason_1$	$Reason_2$	y_3	…	y_j	…	y_m
$Participant_1$	n_{11}	n_{12}	n_{13}	…	n_{1j}	…	n_{1m}
$Participant_2$	n_{21}	n_{22}	n_{23}	…	n_{2j}	…	n_{2m}
x_3	n_{31}	n_{32}	n_{33}	…	n_{3j}	…	n_{3m}
…	…	…	…	…	…	…	…
x_i	n_{i1}	n_{i2}	n_{i3}	…	n_{ij}	…	n_{im}
…	…	…	…	…	…	…	…
x_k	n_{k1}	n_{k2}	n_{k3}	…	n_{kj}	…	n_{km}
Column total	$n_{\cdot 1}$	$n_{\cdot 2}$	$n_{\cdot 3}$	…	$n_{\cdot j}$	…	$n_{\cdot m}$

Figure 5: Calculation column total for each reason and program

In the next step the characteristics of the programs are expressed in nominal values. Therefore, each characterization gets the value as presented in figure six. For example, the target characterization local community becomes the value one, companies the value two and SMEs the value three.

Characteristic	Value					
Target	1	2	3	4	5	6
Local community	X					
Companies		X				
SMEs			X			
Mechanism	1	2	3	4	5	6
Consultation	X					
Financial support		X				
Informing			X			
Eco-labelling				X		
Networking					X	
Voluntary agreement						X
Issue	1	2	3	4	5	6
Resources	X					
Transport		X				
Energy			X			
Climate change				X		
Adaption					X	
Orientation	1	2	3	4	5	6
Monitoring	X					
Development		X				
Substitution			X			
Awareness				x		

Figure 6: Nominal values for characterizations

In the next step, a new table is generated presenting information about the characteristics and the motivations. Therefore, the table includes the calculated column totals and the values for the characteristics of the programs. Here w is the program and y is the reason. The values in the table are the calculated column totals. Following this, the column totals of the program 'Ökoprofit' have to be added in the row of the program. For a better visualization $n_{\cdot j}$ for the 'Ökoprofit' is $Ö_{\cdot j}$, for the 'Zewumobil$^+$' it is $Z_{\cdot j}$ and so on. Furthermore, targets are t_i, mechanisms m_i, issues

i_i, and orientations o_i. The table with the joint information is presented in figure seven.

Program	Target	Mechanism	Issue	Orientation	$Reason_1$	$Reason_2$	y_3	…	y_j	…	y_m
Ökoprofit	3	1	1	1	$Ö._1$	$Ö._2$	$Ö._3$	…	$Ö._j$	…	$Ö._m$
Zewumobil$^+$	3	1	1	2	$Z._1$	$Z._2$	$Z._3$	…	$Z._j$	…	$Z._m$
w_3	t_3	m_3	i_3	o_3	$w_{3._1}$	$w_{3._2}$	$w_{3._3}$	…	$w_{3._j}$	…	$w_{3._m}$
…	…	…	…	…	…	…	…	…	…	…	…
w_i	t_i	m_i	i_i	o_i	$w_{i._1}$	$w_{i._2}$	$w_{i._3}$	…	$w_{i._j}$	…	$w_{i._m}$
…	…	…	…	…	…	…	…	…	…	…	…
w_k	t_k	m_k	i_k	o_k	$w_{k._1}$	$w_{k._2}$	$w_{k._3}$	…	$w_{k._j}$	…	$w_{k._m}$

Figure 7: Joint information characteristic and motivation

6.4 Descriptive distribution among characteristics

In this section the connection between the characteristics of the programs and the motivation of the participants will be analysed in a descriptive manner. Tables 31 to 34 (appendix 2) indicate the absolute frequency of participants of a program with each characteristic for each dimensions (n). The tables also show the frequency of each motivation within the characteristic for all dimensions (m). And finally, the tables provide the relative frequency in per cent for each motivation in relation to the amount of participants of programs with the same characteristic ($\% = \frac{100}{N} \times m$).

For the further description of the data, the statistical values extrema, median, medians and standard deviations will be used in the following sections for each dimension. The maxima describe the motivation, which was indicated most by the SMEs and the minima shows the least indication by SMEs. The medians separate the higher values of the population from the lower values. The mean indicates the central value of the probably distribution. The standard deviation indicates the dispersion of the values to the mean. A low standard deviation indicates, that the values are close to the mean and barely predictable; a high standard deviation indicates, that the values are spread widely and highly predictable.

6.4.1 Distribution within the dimension ‘Target’

Table 31 (appendix 2) gives the distribution of SMEs’ motivation within the dimension ‘Target’.

For the characteristic ‘Local community’ the minimum of the relative frequency is 0% for ‘Access to additional investors’, ‘Access to subsidies’ and ‘Protects the distribution means and possesses’. The maximum is given for the motivation ‘Expresses the values, visions or a strategic direction’ with 37.5%. The median for the relative frequency is 16.7% and the mean is 14.9%. The standard deviation is 10.5%.

For the characteristic ‘Companies’ the minimum is 0% for ‘Religious reasons’; the maximum is with 37.2% ‘Protects local environment’. The mean is 18.3%; the median is 16.7% and the standard deviation is 11.4%.

In case of the characteristic ‘SMEs’ the minimum is again ‘Religious reasons’ with 0% and the maximum is with 39.7% ‘Improves the image’. Here, the mean is 17.5%, the median 13.2% and the standard deviation is 13.0%

These values show, that SMEs participated in Hamburg’s programs where ‘SMEs’ is the target group mostly with the motivation to improve their image. When the municipalities addressed companies, SME most likely wanted to protect the local environment, and, when they addressed the local community, SMEs wanted to express values, visions or strategic directions. Furthermore, the values show, that the frequency of the motivations are least spread in cases where the City of Hamburg addressed the local community and most spread in cases where the City of Hamburg targeted SMEs. This means, that in case, where Hamburg targeted SMEs specifically, the frequency of the motivations are more likely to be the same for all reasons. Following this, the motivations of a SME are less predictable in that case in comparison to the other two characteristics.

6.4.2 Distribution within the dimension ‘Mechanism’

Table 32 in appendix 2 gives the absolute and relative distribution within the dimension ‘Mechanism’.

‘Religious reasons’ is the minimum value for the characteristic ‘Consultation’ (0%); the maximum is given with 39.7% in the cases of ‘Improves the image’ and ‘Protects local environment’. The standard deviation is 13.0%, the median is 13.2 and the mean is 17.5%

For ‘Financial support’ the minimum is 0% for ‘Religious reasons’ and ‘Protects distribution means and possesses’; the maximum can be found for ‘Expresses the values, visions or a strategic direction’ with 41.7%. The standard deviation is 13.2% for a mean of 21.4%. The median is 20.8%.

The minimum of ‘Informing’ is with 1.9% ones more ‘Religious reasons’; its maximum is 36.5% ‘Improves the image’. The mean is 14.4%; the median is 13.5% and the standard deviation is 9.8%.

In case of ‘Eco-labelling’ the minimum is given for every value except the maxima (‘Protects global nature’, ‘Protects local environment’ and ‘Technical or social innovation leader’). Here, the standard deviation is 17.2% from the mean 6.5%. The median is 0%.

The presented values show, that SMEs participated the least because of religious reasons, no matter the characteristic of Hamburg’s programs. Most of them participated to improve their image in programs with the characteristics ‘Consultation’ and ‘Informing’. Also, the motivation ‘Protects local environment’ was twice a maximum (‘Eco-labelling’ and ‘Consultation’). Finally, ‘Expresses the values, visions or a strategic direction’ is the most named motivation in case of the mechanism ‘Financial support’.

Furthermore, it has to be mentioned, that for the characteristic ‘Eco-labelling’ just minima and maxima exist. The reason for that is, that the two companies participated in a program with this characteristic, had no common motivation. Following the standard deviation, the distribution of motivation is most spread in Hamburg’s programs with the characteristic ‘Eco-labelling’. Whereas this values normally would allow the assumption, that the motivations for this characteristic is the most predictable, this should not be assumed in this case through the low amount of participants. The motivation is least spread in cases where the program can be considered as ‘Informing’. Following this, the motivations are the least predictable within this dimension.

6.4.3 Distribution within the dimension 'Issue'

For the characteristics of the dimension 'Issue' the values are presented in table 33, which can be found in appendix 2.

For the category 'Resources' the standard deviation is 12.1% of the mean 19.1%; the median is 18.0%. The minimum is 0.8% in the cases of 'Religious reasons' and 'Protects distribution means and possesses'. The maximum is 39.3% and is given in the case of 'Expresses the values, visions or a strategic direction'.

The median of the characteristic 'Transport' is 12.5%; its mean 15.2% and its standard deviation is 14.9%. The minimum is 0%, which is given in eight cases. The maximum is 43.8% for 'Protects local environment' and 'Protects local health'.

For the characteristic 'Energy' the minimum is 0% and can be found for four motivations. The maximum is 30.8% for 'Safe costs'. The mean of 'Energy' is 11.4% with a standard deviation of 8.3%. The median is 7.7%.

The fourth characteristic, the 'Climate change' has a maximum of 50.0% for 'Improves the image' and a minimum of 0%, which is given in seven cases. The mean is 12.2% with a standard deviation of 13.1%. The median is 10.0%.

The median of 'Adaption' is 11.1%; the mean is 14.5% with a standard deviation of 15.5%. The maximum of 'Adaption' is given in the case of 'Improves the image' with a relatively frequency of 55.6%. The minimum of 0% is met by eight motivations.

Notable within this dimension is especially the frequency of motivations, which meet the minima within their characteristic, for 'Transport' (eight times), 'Energy' (four times), 'Climate change' (seven times) and 'Adaption' (eight times). These high frequencies lead to the assumption that SMEs, which participated in Hamburg's climate change mitigation programs, participated based on a limited amount of motives in programs with these characteristics. Considering this, the City of Hamburg should concentrate on a fewer amount of motivations in its' communication process. Additionally, when the maxima are considered, the range of motivations to be addressed by Hamburg becomes even smaller, especially in the case of 'Adaption', 'Climate change' and 'Transport'. In programs with these characteristics, the maxima 'Improves the image', 'Protects local health' and 'Protects local environment' are above 40%. These high percentages for the two maxima allow Hamburg to concentrate on these motivations when they communicate with SMEs.

When the standard deviations are considered, especially the ones of 'Energy' and 'Adaption' are notable. The standard deviation of the characteristic 'Energy' is low, what means, that the motivation is less predictable. In case of 'Adaption' the standard deviation leads to the opposite assumption; the motivations for participation are rather predictable.

6.4.4 Distribution within the dimension 'Orientation'

The absolute and relative frequencies of the characteristic 'Orientation' are presented in table 34 in the appendix 2.

The median of the characteristic 'Monitoring' is 21.6% and the mean is 21.3% with a standard deviation of 14.7%. The minimum value is 0% for 'Religious reasons' and the maximum is 56.8% for 'Improves the image'.

For 'Development' the minimum is 1.0% in case of 'Religious reasons' and its' maximum is 38.4% for 'Expresses the values, visions or a strategic direction'. The mean is 16.4% with a standard deviation of 11.0%; the median is 14.1%.

In case of 'Substitution' the median is 28.6% and the mean is 24.2% with a standard deviation of 15.8%. The minimum is 0%, which is given in three cases, and the maximum is given in 'Improves the image' and 'Protects local environment' with a frequency of 57.1%.

The median of ‘Awareness’ is 11.1%; its’ mean is 14.8% with a standard deviation of 13.4%. The minimum is 0% and given in three cases. The maximum is 37.0% for ‘Protects local environment’ and ‘Protects local health’.

Within the dimension ‘Orientation’ the standard deviations of all characteristics of Hamburg’s programs are high. This leads to the assumption, that the motivations of SMEs are not predictable and cannot be used by Hamburg to address SMEs to mobilize them for its climate change mitigation strategies. Furthermore, it is striking, that for all characteristics ‘Religious reasons’ is the minimum. Through this, it becomes clear, that Hamburg cannot use this motivation to mobilize SMEs at all. Finally, it is notable, that twice ‘Improves the image’ and ones ‘Protects local environment’ with over 50% are high maxima within their characteristics. Through this high percentage, these motivations are valuable for Hamburg to communicate with SMEs.

6.4.5 Overall distribution

The last descriptive analysis gives an overview about the distribution of SMEs’ motivations without the different dimensions. Table 35, which can be found in appendix 2, gives the distribution.

When the distribution of the motivations is analysed apart from the dimensions, the minimum is given by the motivation ‘Religious reasons’ with 0.1%. The maximum is 9.2% and is met by the motivations ‘Expresses the values, visions or a strategic direction’ and ‘Improves the image’. The median is 3.8% and the mean is 4.34% with a standard deviation of 2.80%. This is a noticeable low standard deviation and indicates a low predictability of the motivation of SMEs’ participation.

6.5 Statistical connection of characteristics and motivation

In the last section the motivations of SMEs, which participated in Hamburg’s climate change mitigation programs, have been analysed descriptively. This section goes beyond a descriptive analysis and will test if a statistical connection between the motivations and the characteristics exist. To enable this analysis the correct test has to be found first. To identify the correct test, the nature and the distribution of the data has to be known. To categorize the nature of the data, it has to be identified if the data are paired or not. As the data are based on various participants, the sample can be described as an independent pairs sample. In the next step, the distribution of the data has to be proofed. Therefore, it has to be identified if the sample is normal distributed or not. To test the normal distribution, a Shapiro-Wilk-Test will be applied. The procedure is presented in figure eight. As 18 different motivations exist, the critical value is 0.897 (Lohninger, 2012).

Hypothesis	H_0: Data is normal distributed H_1: Data is not normal distributed	
Formula	$W = \frac{(\sum_{t=2}^{n} a_t y_t)^2}{\sum_{t=1}^{n}(x_t - \bar{y})^2}$	n number of objects y_t values of ordered sample a_t tabulated coefficient
Degrees of freedom	n	
Rejecting	H_0 has to be rejected if $W < W_\alpha$	
Critical value	$W_\alpha = 0.897$	

Figure 8: Procedure Shapiro-Wilk-Test[8]

[8] (based on Lohninger, 2012)

As identifiable in table 36, which can be found in the appendix 3, each W of all motivation is lower than W_α. Following this $W < W_\alpha$ and H_0 has to be rejected; or in other words: the data is not normal distributed. Furthermore, for each motivation the value of significant is lower than 0.05. This leads to the same conclusion.

Now, as it is known that the data is independent and not nominal distributed, the Kruskal-Wallis-Test can be used to test if a statistical connection between the motivations and the characterization of the programs is given. The Kruskal-Wallis-Test compares two or more rankings. The idea is, that the values within a ranking are equally distributed. The procedure is presented in figure nine.

Hypothesis	H_0: Statistical connection is given H_1: Statistical connection is not given
Formula	$H = \frac{12}{n*(n+1)} \sum_{j=1}^{k} \frac{R_j^2}{n_j} - 3(n+1)$
Size of the sample	n
Group j	J
Number of samples	K
Size of sample group j	n_j
Rank-sum of the group j	R_j
Rejection	$H>H_0$

Figure 9: Procedure Kruskal-Wallis-Test[9]

Table 37, appendix 4, shows the results of the Kruskal-Wallis-Test for the different characterizations of the dimension 'Target'. The critical chi-square value for p=0.05 with two degrees of freedom is 5.991 (Schwarz, 2013, pp. 246–247). The likelihood of identify a value of H is above 0.05. This makes it likely and it can be concluded that there is no difference between the different target groups. Following this, there is no statistical connection between the characteristics and the motivations in the dimension 'Target'.

The results for the Kruskal-Wallis-Test of the dimension 'Mechanism' are presented in table 38, appendix 4. In this case, the critical value for p=0.05 with three degrees of freedom is 7.815 (Schwarz, 2013, pp. 246–247). The likelihood to identify a value of H is above 0.05. This makes it likely and it can be concluded that there is no difference between the different characteristics of the mechanism character. This leads to the analysis, that there is no statistical connection between the motivations and characteristics of the dimension 'Mechanism'.

For the dimension 'Issue', the critical value for p=0.05 with four degrees of freedom is 9.488 (Schwarz, 2013, pp. 246–247). The likelihood to identify a value of H is above 0.05. This makes it likely and it can be concluded that there is no difference between the different issues. Furthermore, there is no statistical connection between SMEs' motivations and the characteristics of the programs. These values can be found in table 39 in the appendix 4.

For the dimension 'Orientation' the critical value for p=0.05 with three degrees of freedom is 7.815 (Schwarz, 2013, pp. 246–247). The likelihood to identify a value of H is above 0.05 (table 40 in the appendix 4). This makes it likely and it can be concluded that there is no difference between the different orientations. Through this,

[9] (based on Hirsig, 2007)

it can be concluded, that there is no statistical connection between the motivations and the characteristics of the programs of the dimension 'Orientation'.

Following the values of the Kruskal-Wallis-Tests and the analysis, there is no statistical connection between any of SMEs' motivations and the characteristics of municipals programs. This means, that the characteristic of a program has no influence on the participants that it attracts; at least not in relation to the motivation of a SME to mitigate climate change. In other words: programs with specific characteristic in a dimension do not necessary attract companies with other motivation than a program with another characteristic in the same dimension.

6.6 Discussion of the statistical connection and descriptive analysis

The last two sections presented the findings of the research about the relationship between municipal's climate change mitigation mobilization strategies and the motivations of participating SMEs on the example of the programs of Hamburg's 'UmweltPartner'. In this section, these findings will be connected to each other and transferred to the context of municipalities in general.

The descriptive analysis allows identifying tendencies within the different dimensions. These tendencies are expressed by the distribution of the motivations within the characteristics and can also be described as likelihood of a motivation in a program with a specific characteristic. A high percentage of companies' motivation in a program with a specific characteristic indicates a tendency of companies with a specific motivation towards a specific characteristic in a dimension. The following table provides an overview of all motivations with a higher likelihood than 40%. Knowledge about the likelihoods of motivations of companies, which participated in a program with a specific program, enables municipalities to focus on these motivations in their communication strategies with SMEs.

Table 29: Motivations with at least 40% per characteristic[10]

Dimension	Characteristic	Motivation	%
'Mechanism'	'Financial support'	'Expresses the values, visions or a strategic direction'	41.7
'Issue'	'Transport'	'Protects local health'	43.8
'Issue'	'Transport'	'Protects local environment'	43.8
'Issue'	'Climate change'	'Improves the image'	50.0
'Issue'	'Adaption'	'Improves the image'	55.6
'Issue'	'Adaption'	'Mitigate local consequences of climate change'	44.4
'Orientation'	'Monitoring'	'Safer workplace through cleaner workplace'	48.6
'Orientation'	'Monitoring'	'Improves the image'	56.8
'Orientation'	'Substitution'	'Improves the image'	57.1
'Orientation'	'Substitution'	'Protects global nature'	42.9
'Orientation'	'Substitution'	'Protects local environment'	57.1
'Orientation'	'Substitution'	'Safe costs'	42.9

However, the Kruskal-Wallis-Test showed, that there is no statistical connection between the characteristics of municipal's climate change mitigation programs and the motivations of participating SMEs for any dimension. This means for municipalities, that a specific characteristic of a dimension has no different ranking of likelihood to attract companies with a specific motivation than another characteristic.

[10] Excluding 'Eco-labeling' due to low amount of participants

Nevertheless, the degrees of likelihood, which were explained above, are still notable and useful information for municipalities.

Furthermore, the missing statistical connection allows also interpreting the distribution of the motivations without acknowledging the characteristics of the dimensions. Due to this, the overall frequencies of SMEs' motivations without considering the design of their programs can also be interpreted. Through this, the motivations of SMEs' with a high frequency have to be addressed the most. A focus on these motivations enables municipalities to communicate with SMEs in a most successful manner. Additionally, municipalities should not use the least mentioned motivations in the communication process with SMEs.

The top three overall likelihoods of motivations exist for 'Expresses the values, visions or a strategic direction' (9.2%), 'Improves the image' (9.2%) and 'Protects global nature' (8.8%). The least three likelihoods exist for 'Religious reasons' (0.1%), 'Protects distribution means and possesses' (0.3%) and 'Access to additional investors' (1.0%) as least mentioned motivations.

Another conclusion can be drawn based on the standard deviations of the different characteristics. The standard deviations indicate that the motivations in programs with specific characteristics are more predictable than in programs with other characteristics. A low predictability is given for all characteristics within the dimension 'Orientation', the characteristic 'Energy' of the dimension 'Issue', the mechanism 'Informing' and the characteristic 'SMEs' of the dimension 'Target'. Through these low predictabilities, the usability of knowledge about SMEs' motivations for municipalities decreases. On the other side are the standard deviations of the distributions of the motivations of the characteristic 'Local community' of the dimension 'Target' and the characteristic 'Adaption' of the dimension 'Issue' suggest a high predictability as they have a high standard deviation.

So far the relationship between motivations and a single dimension or no dimension have been considered. In the next step, the likelihoods of motivations in several dimensions will be considered.

Some motivations are the maximum for a characteristic in different dimensions (table 30). Due to this, municipalities should combine the characteristics of different dimension with the same motivation maximum. This can lead to an attraction of companies with this motivation and enables municipalities to convince SMEs more successfully to enter this program.

Table 30: Motivation maxima in different dimension

Motivation	Dimension	Characteristic	%
'Expresses the values, visions or a strategic direction'	'Target'	'Local community'	37.5
Expresses the values, visions or a strategic direction'	'Mechanism'	'Financial support'	41.7
Expresses the values, visions or a strategic direction'	'Issue'	'Resources'	39.3
Expresses the values, visions or a strategic direction'	'Orientation'	'Development'	38.4
'Protects local environment'	'Target'	'Companies'	37.2
'Protects local environment'	'Issue'	'Transport'	43.8
'Protects local environment'	'Orientation'	'Substitution'	57.1
'Protects local environment'	'Orientation'	'Awareness'	37.0
'Improves the image'	'Target'	'SMEs'	39.7

Motivation	Dimension	Characteristic	%
‘Improves the image’	‘Mechanism’	‘Consultation’	39.7
‘Improves the image’	‘Mechanism’	‘Informing’	36.5
‘Improves the image’	‘Issue’	‘Climate change’	50.0
‘Improves the image’	‘Issue’	‘Adaption’	55.6
‘Improves the image’	‘Orientation’	‘Monitoring’	56.8
‘Improves the image’	‘Orientation	‘Substitution’	57.1
‘Protects local health’	‘Issue’	‘Transport’	43.8
‘Protects local health’	‘Orientation’	‘Awareness’	37.0

7 Discussion and conclusion

This final chapter consists of three parts. Firstly, the findings will be concluded. Secondly, the conclusions will be used to draw recommendations for future municipal climate change mitigation strategies. Finally, recommendations for future research will be given.

7.1 Discussion of findings

Chapter two discussed cities’ approaches for climate change mitigation. It became clear that most of the approaches have a limited impact or that the impact will decline in the future. The only exception is the municipality as facilitator and promoter. This approach enables the population of a city to mitigate their own impacts on climate change. Parts of this population are SMEs. SMEs are a valuable target group as they cause a significant amount of GHG emission and traditional government mechanism, as regulations, cannot guarantee a success. Furthermore, SMEs are often not active in climate change mitigation yet. Through this combination, SMEs mobilization seems to be promising. To enable their SMEs, municipalities can use a high variety of mobilization strategies. Municipalities can use different compositions of characteristics within the dimensions target group, governance mechanism, issues they address and intrinsic orientation of their strategies to mobilize the SMEs.

In the third chapter the role of SMEs’ motivation within municipals climate change mitigation mobilization process has been explained. This was done by introducing the communication process between municipalities and SMEs. The process showed, that the decoding of the message by the SME is a crucial step to guarantee a success of the communication. The importance of the description is given as it defines whether the SME understands what the municipality wanted to communicate or not. If the SME does not understand, what the municipality wanted to express, it is unlikely that the SME will join a program for climate change mitigation. A SMEs’ field of experience has an important role within the crucial step of decoding, as it shapes its process. From SME’s perspective, this field of experience can also be explained as decision-making process. This process will be started only if the SME has a need, which has to be fulfilled. SMEs’ needs are affected by various internal and external variables, but the motivation is a special variable as it is the only variable, which can start the decision-making process. Through this impact of the motivation in the decision-making process it also affects the communication process between the municipality and the SME. The reason for this is, that the motivation starts the informing process of the SME and influences the SMEs’ field of experience.

The third chapter gave a more in-depth perspective on the motivations of SMEs to join a municipal climate change mitigation program. In a first part the ecosphere of SMEs has been investigated in order to understand the internal and external impacts on the motivation of SMEs. The investigation showed, that SMEs

are not independent from their ecosphere; various stakeholders drive them. Furthermore, an overview about SMEs' motivation to participate in municipal climate change mitigation programs has been given. The motivations can be based on the selling market, actual and future employees, governmental regulations, internal management or normative aspects.

Following these assumptions, it can be expected, that there is a relationship between the design of municipals climate change mitigation mobilization programs and the motivation of participating SMEs. Knowledge about this relationship could increase the success of municipalities to mobilize SMEs by mobilizing more SMEs.

Therefore, the programs of Hamburg's 'UmweltPartnerschaft' have been investigated in order to identify the characteristics of the sub-programs. Through this, the programs have been distinguished among their target-group, political mechanism, faced issues and intrinsic orientation. Furthermore, the motivations of the SMEs of the group of Hamburg's 'UmweltPartner' have been explored.

At first, it has to be acknowledged, that the characteristics of the sample suggest, that the data are representative for mature SMEs of the tertiary and quaternary sectors. Secondly, it can be said, that the sample consists of companies, which are conscious about the environment. The consciousness is given by the choice of population. Organisations, which are labelled as 'UmweltPartner', have already proven, that they are especially engaged in Hamburg's climate change mitigation programs. However, even in this population companies' commitment towards climate change mitigation can differ in its strength. Approximately 60% of the samples' companies participated in more than one program. Through this, the sample is representative for companies with strong ties with climate change mitigation and even stronger ties with climate change mitigation.

The results showed, that there is no statistical connection in any case between the characteristics of a program and the motivation of participating SMEs. Due to this, municipalities know, that the design of the program has no impact on the ranking of likelihood of attracting SMEs with a specific motivation. Nevertheless, the degree of likelihood to attract a SME with a specific motivation still varies. The degree of likelihood is expressed by the relatively frequencies of motivation within a characteristic. The characteristics with the likelihood for a specific motivation above 40% have been shown in table 29.

Furthermore, it has been shown, that one motivation is likely in programs with specific characteristics in different dimensions (table 30). This allows municipalities to combine these characteristics to maximise the likelihood to attract companies with a specific motivation. Through this, they can concentrate on this motivation to address companies and they can increase the success of mobilizing companies.

Finally, the relationship between the design of municipals' climate change mitigation mobilization strategies and the motivation of participating SMEs' is also expressed by the predictability of the motivation in programs with a specific characteristic. The predictability can be identified by the standard deviation of the motivations; a high standard deviation indicates a high predictability and a low standard deviation indicates a low predictability.

To summarise these findings, it can be said, that a relationship between the design of municipal climate change mobilization strategies and the motivation of participating SMEs exists. Whereas a difference in the ranking of the likelihood between different characteristics and motivation is not notable, the degree of the likelihoods still varies. Furthermore, the data showed, that several motivations are most likely for characteristics in different dimensions. Finally, it has been identified that the predictability of motivations in programs with specific characteristics varies.

7.2 Recommended implementations of the research

Based on the findings of the research recommendations for municipal climate change mitigation programs are possible. These recommendations can lead to an increased participation of SMEs in their programs by using specific knowledge about SMEs' motivations in the communication process.

Firstly, municipalities should always focus on the same motivations of SMEs when they promote their climate change mitigation programs. This recommendation is based on the Kruskal-Wallis-Test, which proofed, that there is no difference in the ranking of the likelihood of motivations in programs with a specific characteristic.

Secondly, municipalities should mostly focus on the motivations with a high overall frequency. The overall frequencies can be found in table 35. The table shows that municipalities should focus especially on the motivations 'Expresses the values, visions or a strategic direction', 'Improves the image' and 'Protects local environment'. Additionally, it can be recommended, that municipalities should avoid the motivations 'Access to additional investors', 'Protects distribution means and possess' and 'Religious reasons'

Thirdly, whereas municipalities should focus on specific motivations, no matter the characteristics of their program, the degree of focus should vary. It has been shown, that in some characteristic-motivation combinations the likelihood is higher than in others. The characteristic-motivation combinations, which are the most promising for municipalities to mobilize SMEs, are presented in table 29. If municipalities have a program with such a characteristic, they should be even more focused than in other cases.

Fourthly, municipalities should not just focus on a motivation based on the characteristic of one dimension. As shown by table 30, several motivations are the maximum for more than one characteristic. If a motivation is a maximum in different dimension, municipalities can combine these characteristics in the different dimension to increase the success of SME mobilization.

Finally, municipalities should address a broader variety of motivations in cases where the motivations are not predictable. The low predictability is expressed by a low standard deviation. This also means, that municipalities can address fewer motivations in cases of a high standard deviation.

7.3 Reflection and future research

The previous two sections gave an overview about the findings of the research and the following recommendations. In this section suggestions for future research in this field will be presented.

The research is based on a population, which is locally and ideologically limited. The limitations exist through the focus on the City of Hamburg and the focus on SMEs from the group 'UmweltPartner'.

The choice of the group of SMEs, which are labelled as 'UmweltPartner', can lead to rather normative motivations. The reason for the normativity is, that these companies proofed to be especially successful participants in the programs of the City of Hamburg. Due to this, it can be assumed, that they have a stronger commitment to climate change mitigation than companies without this label. This normativity could be a reason for the high frequency of the motivation 'Protects local environment'.

The local limitation of the city of Hamburg can have an influence on both, the characteristic of the samples and the motivations of the sample. An example for the influence on the motivation can be find in the motivation 'Religious reasons'. In Hamburg 52% of the inhabitants do not consider themself as catholic, protestant or

Islamic (Statistisches Bundesamt, Evangelische Kirche Deutschland, Zentralrat der Juden, Deutsche Islamkonferenz, & Süddeutsche Zeitung, 2011). This makes it likely, that these people do not participate because of religious motivations. Furthermore, 79.83% of Hamburg's population works in the service sector (Arbeitskreis Erwerbstätigenrechnung des Bundes und der Länder & Statistisches Amt für Hamburg und Schleswig-Holstein, 2013). This high percentage makes it likely, that rather companies of the service sector participate than from other economic sectors.

To overcome these limitations and create a higher diversity in the participating companies, the research should also include companies, which participated, but are not labelled as 'UmweltPartner'. Additionally, the research should include companies from different cities. Furthermore, a population from different cities would also offer the opportunity to add the dimension location. Through this, it could be proofed, if it is possible to transfer the knowledge of the research to other locations or not.

Additionally to the limitation of the population of the research, the research design also limited the evaluation of the programs. It allowed labelling each program with one characteristic for each dimension. The investigated programs already showed, that programs often meet the description of several characteristics in the same dimension. A program, for example, can address energy and resources; or it can have a consultative character and provide financial support at the same time. In this case, it is necessary to use a multidimensional database. This kind of database would allow labelling the same program with several characteristics in the same dimension without limiting the options of analysis.

List of References

Amt für Wohnen, Stadterneuerung und Bodenordnung, Abteilung Integrierte Stadteilentwicklung. (2013). *Förderrichtlinien für Maßnahmen im Rahmenprogramm Integrierte Stadtteilentwicklung Förderrichtlinien*. Hamburg. Retrieved from https://www.hamburg.de/contentblob/3814348/data/foerderrichlinien-rise.pdf

Andrews, D., Nonnecke, B., & Preece, J. (2003). Conducting Research on the Internet: Online Survey Design, Development and Implementation Guidelines. *Interntional Journal of Human-Computer Interction*, *16*(2), 185–210. Retrieved from http://auspace.athabascau.ca/handle/2149/1336

Arbeitskreis Erwerbstätigenrechnung des Bundes und der Länder, & Statistisches Amt für Hamburg und Schleswig-Holstein. (2013). *Erwerbstätige nach Wirtschaftszweigen in der Metropolregion Hamburg 2009-2013*. hamburg.de. Retrieved from http://metropolregion.hamburg.de/statistikportal-tabelle-erwerbstaetige/

Arnstein, S. R. (1969). A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, *35*(4), 216–224. doi:10.1080/01944366908977225

Assael, H. (1984). *Consumer behavior and marketing action*. Cincinnati, Ohio: SOUTH-WESTERN COLLEGE PUBLISHING.

Ayyagari, M., Demirgüç-Kunt, A., & Beck, T. (2003). *Small and Medium Enterprises across the Globe: A New Database* (No. 3127). The World Bank. doi:10.1596/1813-9450-3127

Beese, P. F. O. (n.d.). *Welt im Wandel: Herausforderungen für die deutsche Wirtschaft: Jahresgutachten 1996*.

Behörde für Stadtentwicklung und Umwelt. (n.d.). Qualitätsverbund umweltbewußter Betriebe - Stadt Hamburg. Hamburg.de. Retrieved November 06, 2014, from https://www.hamburg.de/qub/

Behörde für Stadtentwicklung und Umwelt. (2012). *Unsere Tipps für Ihr Unternehmen: Das können Sie tun*. Hamburg: Hamburg.de. doi:10.9785/ovs.9783504382629.439

Behörde für Stadtentwicklung und Umwelt. (2013). *Innovationen für den Klima-, Ressourcen- und Umweltschutz: UmweltPartnerschaft Hamburg 2013-2018*. Hamburg. Retrieved from http://www.hamburg.de/contentblob/3955988/data/arbeitsprogramm-2013-2018.pdf

Behörde für Stadtentwicklung und Umwelt, Behörde für Wirtschaft Verkehr und Innovation, Handelskammer Hamburg, & Handwerkskammer Hamburg. (2012). *Vereinbarung zwischen der Freien und Hansestadt Hamburg und der Hamburger Wirtschaft zur Verbesserung der Luftqualität in Hamburg*. Hamburg:

Hamburg.de. Retrieved from https://www.hamburg.de/contentblob/3551902/data/download-vereinbarung.pdf

Belch, G., & Belch, M. (2003). *Advertising and promotion: An integrated marketing communications perspective*. Retrieved from http://202.74.245.22:8080/xmlui/handle/123456789/54

Boeckx, P., Cleemput, O. Van, & Villaralvo, I. (1996). Methane emission from a landfill and the methane oxidising capacity of its covering soil. *Soil Biology and Biochemistry*, *28*(10-11), 1397–1405. doi:10.1016/S0038-0717(96)00147-2

Bulkeley, H., & Kern, K. (2006). Local Government and the Governing of Climate Change in Germany and the UK. *Urban Studies*, *43*(12), 2237–2259. doi:10.1080/00420980600936491

Bundesministerium für Wirtschaft und Technologie. (2013). *Energie in Deutschland: Trends und Hintergründe zur Energieversorgung*. Berlin: Bundesministerium für Wirtschaft und Technologie (BMWi). Retrieved from http://www.bmwi.de/Dateien/Energieportal/PDF/energie-in-deutschland,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf

Burch, S., Schroeder, H., Rayner, S., & Wilson, J. (2013). Novel multisector networks and entrepreneurship: the role of small businesses in the multilevel governance of climate change. *Environment and Planning C: Government and Policy*, *31*(5), 822–840. doi:10.1068/c1206

Chamber of Commerce Hamburg. (n.d.). *HK-Energie-Lotsen*. Hamburg: Chamber of Commerce Hamburg. Retrieved from http://www.hk24.de/linkableblob/hhihk24/innovation/downloads/356910/.8./data/2009_01_19_Energie_Lotsen-data.pdf

City of Cape Town. (2014). About green electricity. City of Cape Town. Retrieved July 09, 2014, from http://www.capetown.gov.za/en/electricity/GreenElectricity/Pages/default.aspx

City of Portland. (2014). About Us | The City of Portland, Oregon. Retrieved June 11, 2014, from http://www.portlandoregon.gov/sustainabilityatwork/62152

Comission of the European Communities. (2007). *Small, clean and competitive: A programme to help small and medium-sized enterprises comply with environmental legislation* (No. SEC(2007) 906). Brussels. Retrieved from http://ec.europa.eu/environment/sme/pdf/impact_assess_906_en.pdf

Constantionos, C., Sørensen, S. Y., Larsen, P. B., Alexopoulou, S., Pedersen, K., Kristiansen, K. R., … Papageogiou, M. (2010a). *SMEs and the environment in the European Union: Main Report*. European Commission, DG Enterprise and Industry. Retrieved from http://ec.europa.eu/enterprise/policies/sme/business-environment/files/main_report_en.pdf

Constantionos, C., Sørensen, S. Y., Larsen, P. B., Alexopoulou, S., Pedersen, K., Kristiansen, K. R., … Papageogiou, M. (2010b). *SMEs and the environment in*

the European Union: Technical Annex. European Commission, DG Enterprise and Industry. Retrieved from http://ec.europa.eu/enterprise/policies/sme/business-environment/files/technical_annex.pdf

Corfee-Morlot, J., Kamal-Chaoui, L., Donovan, M. G., Cochran, I., Alexis, R., & Teasdale, P.-J. (2009). *Cities, Climate Change and Multilevel Governance* (No. 14).

Demirguc-Kunt, A., Ayyagari, M., & Maksimovic, V. (n.d.). *Table 1 : SME Contribution to Employment Shares*. The World Bank Group. Retrieved from http://go.worldbank.org/DMD75EFBB0

Die Landeshauptstadt. (2013). *Münchner Förderprogramm Energieeinsparung: Richtlinienheft gültig ab 01.05.2013*. Munich: Landeshauptstadt München. Retrieved from http://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Gesundheit-und-Umwelt/Klimaschutz_und_Energie/Energieeffizientes_Bauen/Foerderung_und_Qualitaet/FES.html

Downing, T. E., Ringius, L., Hulme, M., & Waughray, D. (1997). Adapting to climate change in Africa. *Mitigation and Adaption Strategies for Clobal Change*, *2*, 19–44.

Dubielzig, F., & Schaltegger, S. (2005). Corporate Social Responsibility. In M. Althaus, M. Geffken, & S. Rawe (Eds.), *Handlexikon Public Affairs* (pp. 240–243). Münster: Lit.

EnergieBauZentrum Hamburg. (n.d.-a). *Angebot des EnergieBauZentrums*. Hamburg. Retrieved from http://www.energiebauzentrum.de/assets/Downloads/EBZFlyerA42011NEUECI.pdf

EnergieBauZentrum Hamburg. (n.d.-b). *Jahresbericht des EnergieBauZentrums 2011*. Hamburg. Retrieved from http://www.energiebauzentrum.de/assets/Downloads/EBZ-Jahresbericht-2011.pdf

Energiekosten im Unternehmen senken - Handelskammer Hamburg. (n.d.). Retrieved November 11, 2014, from http://www.hk24.de/innovation/energiefragen/energiemanagement/359248/HK_Energie_Lotsen.html

Energiereferat. (2008). *Klimaschutz in Frankfurt am Main*. Frankfurt am Main: Stadt Frankfurt am Main.

Energy Efficiency Forum for Commercial Buildings. (n.d.). City of Cape Town. Retrieved June 29, 2014, from https://www.capetown.gov.za/en/EnergyForum/Pages/default.aspx

ESF-Projekt ZEWUmobil+. (n.d.). *ZEWUmobil+: Lotsen für Energie & Ressourceneffizienz*. Hamburg. Retrieved from http://www.zewumobil.de/links_und_downloads/ZEWUmobilplus_Faltblatt.pdf

European Parliament and the Council. (2009). Regulation (EC) No 1221/2009. *Official Journal of the European Union*, *52*(L342), 1–209. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2009:342:FULL&from=EN

European Union Commission. Promoting a European framework for Corporate Social Responsibility (2001). European Union. Retrieved from http://www.csr-in-commerce.eu/data/files/resources/717/com_2001_0366_en.pdf

European Union Commission. (2003). COMMISSION RECOMMENDATION of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. *Official Journal of the European Union*, *L124*, 36–41.

Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research*, *15*(2), 195–219. doi:10.1108/10662240510590360

Fischer, A., & Hänisch, D. (n.d.). Energie- Tische zum Klimaschutz | DIFU. Deutsches Institut für Urbanistik. Retrieved June 09, 2014, from http://www.difu.de/node/4550

Fitzgerald, J. (2008). Cities, Climate Change and Urban Economic Development. In *Competitive Cities and Climate Change* (pp. 147–170). Milan.

Freie und Hansestadt Hamburg Behörde für Stadtentwicklung und Umwelt. (2014). *Qualifizierte Berater des Beraterpools*. Retrieved from http://www.hamburg.de/contentblob/4053862/data/beraterliste-stand-juli-2014.pdf

Gadenne, D. L., Kennedy, J., & McKeiver, C. (2008). An Empirical Study of Environmental Awareness and Practices in SMEs. *Journal of Business Ethics*, *84*(1), 45–63. doi:10.1007/s10551-008-9672-9

Gagliardi, D., Muller, P., Glossop, E., Cailandro, C., Fritsch, M., Brtkova, G., … Ramlogan, R. (2013). *Annual Report on European SMEs 2012/2013: A Recovery On The Horizon?*. (D. Cox, D. Gagliardi, E. Monfradini, S. Cuvelier, D. Vidal, B. Laibarra, … A. Mattes, Eds.). European Commission. Retrieved from http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2013/annual-report-smes-2013_en.pdf

Geschäftsstelle UmweltPartnerschaft Hamburg. (n.d.). *Unternehmen Sie Etwas!: Für Energiewende, Klima- und Ressourcenschutz: Handlungsfelder für Unweltschutzmassnahmen von Unternehmen*. Hamburg: Hamburg.de. Retrieved from http://www.hamburg.de/contentblob/3992090/data/uebersicht-angebote.pdf

Geschäftsstelle UmweltPartnerschaft Hamburg. (2013). *Die UmweltPartnerschaft Hamburg: Unser Angebot – Ihr Engagement!*. Hamburg: Behörde für

Stadtentwicklung und Umwelt. Retrieved from http://www.hamburg.de/contentblob/3956014/data/basisbroschuere.pdf

Geyer, B. (2011). Ökoprofit Club Hamburg. ÖKOPROFIT Hamburg. Retrieved November 06, 2014, from http://www.oekoprofit-club-hamburg.de/oepchh/cxcms/page/start

Gough, C., & Shackley, S. (2001). The Respectable Politics of Climate Change: The Epistemic Communities and NGOs. *International Affairs*, *77*(2), 329–345.

Gunningham, N. (2002). Regulating Small and Medium Sized Enterprises. *Journal of Environmental Law*, *14*(1), 3–32. doi:10.1093/jel/14.1.3

Gunningham, N., Kagan, R. A., & Thornton, D. (2004). Social License and Environmental Protection: Why Businesses Go beyond Compliance. *Law & Social Inquiry*, *29*(2), 307–341. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1747-4469.2004.tb00338.x/abstract

Günterberg, B. (2012). Unternehmensgrößenstatistik – Unternehmen, Umsatz und sozialversicherungspflichtig Beschäftigte 2004 bis 2009 in Deutschland, Ergebnisse des Unternehmensregisters (URS 95). In Institut für Mittelstandsforschung Bonn (Ed.), *Daten und Fakten Nr. 2*. Bonn: Institut für Mittelstandsforschung Bonn. Retrieved from http://www.ifm-bonn.org//uploads/tx_ifmstudies/Daten-und-Fakten-2_2012.pdf

Hall, N. L., & Taplin, R. (2007). Revolution or inch-by-inch? Campaign approaches on climate change by environmental groups. *The Environmentalist*, *27*(1), 95–107. doi:10.1007/s10669-007-9022-y

Hamburg.de. (n.d.). *Umweltcheck für das Handwerk: Mit Augenmaß zu mehr Effizienz*. Hamburg. Retrieved from https://www.hamburg.de/contentblob/139510/data/check-flyer.pdf

Hamburg.de. (2014). *Liste der UmweltPartner*. Retrieved from http://www.hamburg.de/contentblob/4319492/data/partnerliste-mai-2014.pdf

Hamburgische Investitions- und Förderbank. (2014a). *Energetische Modernisierung von Nichtwohngebäuden: Förderrichtlinie für die energetische Modernisierung der Gebäudehülle und Energieberatung bei Nichtwohngebäuden: Gültig ab 01. September 2014*. Hamburg. Retrieved from http://www.ifbhh.de/fileadmin/pdf/IFB_Download/IFB_Foerderrichtlinien/FoeRi_Mod_NWG.pdf

Hamburgische Investitions- und Förderbank. (2014b). *Erneuerbare Wärme: Produktinformation für die Förderung der Einsatzes Erneuerbarer Energien in Unternehmen, Wohngebäuden und Nichtwohngebäuden*. Hamburg. Retrieved from http://www.ifbhh.de/fileadmin/pdf/IFB_Download/IFB_Foerderrichtlinien/FoeRi_Erneuerbare_Waerme.pdf

Hamburgische Investitions- und Förderbank. (2014c). *Umweltinno – Ressourceneffizienz: Zuschuusse für ressourcenschonende Innovationsprojekte von Hamburger Unternehmen und Forschungseinrichtungen nach der Hamburger FuE-Förderrichtlinie*. Hamburg. Retrieved from http://www.hamburg.de/contentblob/4322246/data/umweltinno-ressourcenefizienz.pdf

Hamburgische Investitions- und Förderbank. (2014d). *Unternehmen für Ressourcenschutz*. Hamburg. Retrieved from http://www.ifbhh.de/fileadmin/pdf/IFB_Download/IFB_Foerderrichtlinien/FoeRi_UfR.pdf

Hammer, A. (2010). Introduction. In A. Hammer, C. Jabara, L. Bloodgood, & N. Grossman (Eds.), *Small and Medium-Sized Enterprises: Overview of Participation in U.S. Exports* (pp. 1–6). Washington, DC: United States International Trade Commission. Retrieved from http://www.usitc.gov/publications/332/pub4125.pdf

Han, X., & Naeher, L. P. (2006). A review of traffic-related air pollution exposure assessment studies in the developing world. *Environment International*, *32*(1), 106–20. doi:10.1016/j.envint.2005.05.020

Haq, S. N. (2001). Islam and Ecology: Toward Retrieval and Reconstruction. In M. E. Tucker & J. A. Grim (Eds.), *Religion and Ecology: Can the Climate Change* (pp. 141–178). Cambridge, Massachusetts: MIT Press.

Harriet, B., & Bulkeley, H. (2000). Public Understanding of Science in Newcastle, Australia. *Public Understanding of Science*, *9*, 313–333.

Healey, P. (2006). Transforming governance: Challenges of institutional adaptation and a new politics of space. *European Planning Studies*, *14*(3), 299–320. doi:10.1080/09654310500420792

Hicks, C., & Dietmar, R. (2007). Improving cleaner production through the application of environmental management tools in China. *Journal of Cleaner Production*, *15*(5), 395–408. doi:10.1016/j.jclepro.2005.11.008

Hirsig, R. (2007). *Statistische Methoden in den Sozialwissenschaften: Eine Einführung im Hinblick auf computergestützte Datenanalysen mit SPSS für Windows: Band 2*. Zürich: Seismo. Retrieved from http://www.methodenberatung.uzh.ch/datenanalyse/unterschiede/zentral/kruskal.html

Holden, R. (2007). New graduate employment within SMEs: still in the dark? *Journal of Small Business and Enterprise Development*, *14*(2), 211–227. Retrieved from http://www.emeraldinsight.com/journals.htm?articleid=1610506&show=abstract

Hooghe, L., & Marks, G. (2003). Unraveling the Central State, But How?: Types of Multi-Level Governance. Vienna: Institute for Advanced Studies.

Horne, R. E. (2009). Limits to labels: The role of eco-labels in the assessment of product sustainability and routes to sustainable consumption. *International Journal of Consumer Studies*, *33*, 175–182. doi:10.1111/j.1470-6431.2009.00752.x

Ingirige, M., Joness, K., & Proverbs, D. (2008). Investigating SME resilience and their adaptive capacities to extreme weather events: A literature review and synthesis. In *Building Resilience BEAR 2008* (pp. 582–593). Kandalama, Sri Lanka: University of Salford Manchester. Retrieved from http://usir.salford.ac.uk/18262/

ISO 14001:2004 - Environmental management systems -- Requirements with guidance for use. (2008). International Organization for Standardization. Retrieved November 10, 2014, from http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=31807

ISO 50001:2011 - Energy management systems -- Requirements with guidance for use. (2011). Retrieved November 10, 2014, from http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=51297

Jamali, D., Zanhour, M., & Keshishian, T. (2009). Peculiar Strength and Relational Attributes of SMEs in the Context of CSR. *Journal of Business Ethics*, *87*, 355–377. doi:10.1007/s10551-008-9925-7

Jenkins, H. (2004). A Critique of Conventional CSR Theory: An SME Perspective. *Journal of General Management*, *29*(4), 37–57.

Jenkins, H. (2006). Small Business Champions for Corporate Social Responsibility. *Journal of Business Ethics*, *67*(3), 241–256. doi:10.1007/s10551-006-9182-6

Jordan, A. (2008). The governance of sustainable development: taking stock and looking forwards. *Environment and Planning C: Government and Policy*, *26*(1), 17–33. doi:10.1068/cav6

Jordan, A., Wurzel, R. K. W., & Zito, A. (2005). The Rise of “New” Policy Instruments in Comparative Perspective: Has Governance Eclipsed Government? *Political Studies*, *53*(3), 477–496. doi:10.1111/j.1467-9248.2005.00540.x

Kern, K., & Alber, G. (2008). Governing Climate Change In Cities: Modes Of Urban Climate Governance In Multi-Level Systems: OECD Conference Proceedings. In *Competitive Cities and Climate Change* (pp. 171–196). Milan: Institutio per gli Studi di Politica Internazionale.

Köhler, A. (2012). *Hamburger Klimaschutzprogramm: Erneuerbare Wärme*. Hamburg: Freie und Hansestadt Hamburg Behörde für Stadtentwicklung und Umwelt. Retrieved from https://www.hamburg.de/contentblob/3944244/data/foerderprogramm-erneuerbarewaerme.pdf

Landesamt für Natur Umwelt und Verbraucherschutz Nordrhein-Westfalen. (n.d.). ALOIS: Informationen. Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen &Ministerium für Umwelt und Naturschutz, Landwirtschaft und Verbraucherschutz des Landes Nordrhein-Westfalen. Retrieved October 23, 2014, from http://www.alois-info.de/index.php?id=4

Lemos, M. C., & Agrawal, A. (2006). Environmental Governance. *Annual Review of Environment and Resources*, *31*(1), 297–325. doi:10.1146/annurev.energy.31.042605.135621

Lohninger, H. (2012). Shapiro-Wilk-Test. *Grundlagen der Statistik*. Retrieved November 24, 2014, from http://www.statistics4u.info/fundstat_germ/ee_shapiro_wilk_test.html

Masurel, E. (2007). Why SMEs Invest in Environmental Measures: Sustainability Evidence from Small and Medium-Sized Printing Firms. *Business Strategy and the Environment*, *16*, 190–201. doi:10.1002/bse

McFague, S. (2001). New House Rules: Christianity, Economics, and Planetary Living. In M. E. Tucker & J. A. Grim (Eds.), *Religion and Ecology: Can the Climate Change* (pp. 125–140). Cambridge, Massachusetts: MIT Press.

Moser, S., & Tribbia, J. (2006). Vulnerability to inundation and climate change impacts in California: coastal managers' attitudes and perceptions. *Marine Technology Society Journal*. Retrieved from http://www.ingentaconnect.com/content/mts/mtsj/2006/00000040/00000004/art00006

Myers, N. (2002). Environmental refugees: a growing phenomenon of the 21st century. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *357*(1420), 609–13. doi:10.1098/rstb.2001.0953

Narayanan, V. (2001). Water, Wood, and Wisdom: Ecological Perspectives from the Hindu Traditions. In M. E. Tucker & J. A. Grim (Eds.), *Religion and Ecology: Can the Climate Change* (pp. 179–206). Cambridge, Massachusetts: MIT Press.

OECD. (2005). *SME and Entrepreneurship Outlook - 2005 Edition*. OECD Publishing. doi:10.1787/9789264009257-en

OECD. (2012). Enterprises by size and class. *OECD Structural and Demographic Business Statistics (SDBS)*. OECD Publishing. Retrieved June 03, 2014, from http://dx.doi.org/10.1787/888932596992

Osteryoung, J. S., & Newman, D. (1993). What Is a Small Business? *The Journal of Entrepreneurial Finance*, *2*(3), 219–231.

Ozinsky, S. (2012). *Climate Smart Cape Town: Cape Town's profiling and awareness campaign on climate change: Legacy Report*. (K. Ackermann, Ed.). Cape Town: City of Cape Town. Retrieved from http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications/Documents/Climate_Smart_Cape_Town_Legacy_Report_2012-05-18.pdf

Parmesan, C. (2006). Ecological and Evolutionary Responses to Recent Climate Change. *Annual Review of Ecology, Evolution, and Systematics*, *37*(1), 637–669. doi:10.1146/annurev.ecolsys.37.091305.110100

Patz, J. a, Campbell-Lendrum, D., Holloway, T., & Foley, J. a. (2005). Impact of regional climate change on human health. *Nature*, *438*(7066), 310–7. doi:10.1038/nature04188

Pindyck, R. S. (2003). *VOLATILITY IN NATURAL GAS AND OIL MARKETS* (No. 03-012 WP). Cambridge, Massachusetts. Retrieved from http://18.7.29.232/bitstream/handle/1721.1/45005/2003-012.pdf?sequence=1

Posas, P. (2007). Roles of religion and ethics in addressing climate change. *Ethics in Science and Environmental Politics*, *7*, 31–49. doi:10.3354/esep00080

Price, L. (2005). Voluntary Agreements for Energy Efficiency or GHG Emissions Reduction in Industry: An Assessment of Programs Around the World. In *ACEEE Summer Study on Energy Efficiency in Industry* (pp. 1–12). Lawrence Berkeley National Laboratory. Retrieved from https://escholarship.org/uc/item/67c4x06h.pdf

Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review and Research Agenda. *International Journal of Management Reviews*, *15*(1), 1–14. doi:10.1111/j.1468-2370.2011.00328.x

Reuveny, R. (2007). Climate change-induced migration and violent conflict. *Political Geography*, *26*(6), 656–673. doi:10.1016/j.polgeo.2007.05.001

Revell, A., Stokes, D., & Chen, H. (2010). SMALL BUSINESSES AND THE ENVIRONMENT: TURNING OVER A NEW LEAF? *Business Strategy and the Environment*, *19*(5), 273–288. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/bse.628/abstract

Revi, A., Satterthwaite, D., Aragon-Durrand, F., Corfee-Morlot, J., Kiunsi, R. B. R., Pelling, M., … Tuts, R. (2014). Urban Areas. In J. Balbus & O.-D. Cardona (Eds.), *IPCC WGII AR5* (pp. 1–113). IPCC. Retrieved from http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap8_FGDall.pdf

Rothberg, A. (2011). *The Carbon Footprint of Victoria's Small and Medium Enterprises*. East Melbourn: Carbon Down. Retrieved from http://www.carbondown.com.au/downloads/Carbon_Down-Carbon-Footprint-of-Victoria's-SMEs_Final-Report.pdf

Sampei, Y., & Aoyagi-Usui, M. (2009). Mass-media coverage, its influence on public awareness of climate-change issues, and implications for Japan's national campaign to reduce greenhouse gas emissions. *Global Environmental Change*, *19*(2), 203–212. doi:10.1016/j.gloenvcha.2008.10.005

San Francisco Green Business. (2009). SF Green Business - Home. San Francisco Green Business. Retrieved July 01, 2014, from http://sfgreenbusiness.org/

San Francisco Green Business. (2014). SAN FRANCISCO GREEN BUSINESS PROGRAM STANDARDS: OFFICE/RETAIL. San Francisco Green Business. Retrieved July 07, 2014, from http://sfgreenbusiness.org/images/stories/program standards PDFs/Office-Retail_Checklist.pdf

Schaltegger, S., & Sturm, A. (2000). *Ökologieorientierte Entscheidungen im Unternehmen: Ökologisches Rechnungswesen statt Ökobilanzierung: Notwendigkeit, Kriterien, Konzepte*. Retrieved from http://www2.leuphana.de/umanagement/csm/content/nama/downloads/download_publikationen/Schaltegger_Sturm_Oekologieorientierte_Entscheidungen.pdf

Schiffman, L. G., & Kanuk, L. L. (2000). *Consumer behavior*. Engelwood Cliffs, New Jersey: Prentice-Hall.

Schwarz, J. (2013). *Grundlagen der Statistik 2: Wahrscheinlichkeitsrechnung und induktive Statistik*. Herne: NWB Verlag.

Spence, L., Jeurissen, R., & Rutherfoord, R. (2000). Small Business and the Environment in the UK and the Netherlands: Towards Stakeholder Cooperation. *Business Ethics Quarterly*, *10*(4), 945–965.

Stadt Heidelberg. (2010). *Förderprogramm „Rationelle Energieverwendung“: Heidelberger Förderprogramm für energiesparendes Bauen und Sanieren*. Heidelberg. Retrieved from http://www.swhd.de/cms/Strom/Foerderprogramme/Foerderprogramm_-_Rationelle_Enerwendung/Foerderprogramm_Rationelle_Ener_2010.pdf

Statistisches Bundesamt, Evangelische Kirche Deutschland, Zentralrat der Juden, Deutsche Islamkonferenz, & Süddeutsche Zeitung. (2011, September 17). Religionszugehörigkeit der Deutschen nach Bundesländern im Jahr 2011*. *Süddeutsche Zeitung, Nr. 215*, p. 6. Retrieved from http://de.statista.com/statistik/daten/studie/201622/umfrage/religionszugehoerigkeit-der-deutschen-nach-bundeslaendern/

Sustainable 2010-2014 Programme Agency, & City of Rotterdam/Rotterdam Climate Initiative. (2013). *2012 Rotterdam Sustainability Monitor: Investing in Sustainable Growth*. (Leene Communicatie & Gouda, Eds.). Rotterdam: Sustainable 2010-2014 Programme Agency, municipality of Rotterdam. Retrieved from http://rotterdamclimateinitiative.nl/documents/Documenten/RCI_Duurzsmonitor_UK_2012 voor website.pdf

Swearer, D. K. (2001). Principles and Poetry, Places and Stories: The Resources of Buddhist Ecology. In M. E. Tucker & J. A. Grim (Eds.), *Religion and Ecology: Can the Climate Change* (pp. 225–242). Cambridge, Massachusetts: MIT Press.

The Sustainable Transport Unit, & City of Cape Town. (n.d.). *How to travel SMART: Promoting sustainable transport in the workplace*. 29/06/14: City of Cape Town. Retrieved from http://www.capetown.gov.za/en/TravelSMART/Documents/Travel_SMART_Document.pdf

Tirosh-Samuelson, H. (2001). Nature in the Sources of Judaism. In M. E. Tucker & J. A. Grim (Eds.), *Religion and Ecology: Can the Climate Change* (pp. 99–124). Cambridge, Massachusetts: MIT Press.

Umweltaudit - EMAS Hamburg. (2014). Hamburg.de. Retrieved November 10, 2014, from https://www.hamburg.de/behoerdenfinder/hamburg/11279183/

UN Human Settlements Programme. (2011). *Cities and Climate Change—Global Report on Human Settlements 2011*. London; Washington, DC: Earthscan.

Van Peijpe, D., Boer, F., Hurtado, J., Jorritsma, J., Marin, E., Wissing, A., … Wirschell, N. (2013). *Rotterdam: Climate Change Adaptation Strategy*. (F. Vertalingen & R. Fox, Trans.). Rotterdam: City of Rotterdam. Retrieved from http://www.rotterdamclimateinitiative.nl/documents/Documenten/20121210_RAS_EN_lr_versie_4.pdf

Vermeulen, W., & Kok, M. (2002). Contemporary practices: greenheouse scepticism? In M. T. J. Kok, W. J. V. Vermeulen, A. P. C. Faaij, & D. de Jager (Eds.), *Global Warmin and Social Innovation: the Challenge of a Climate Neutral Society*. London: Erthscan Publications. doi:10.4324/9781849771450

Vives, A. (2006). Social and Environmental Responsibility in Small and Medium Enterprises in Latin America. *Journal of Corporate Citizenship*, *21*, 39–50. Retrieved from http://publications.iadb.org/bitstream/handle/11319/4711/Social and Environmental Responsibility in Small and Medium Enterprises in Latin America.pdf?sequence=1

Weber, M. (2008). The business case for corporate social responsibility: A company-level measurement approach for CSR. *European Management Journal*, *26*(4), 247–261. doi:10.1016/j.emj.2008.01.006

Wedawatta, G., & Ingirige, B. (2012). Resilience and adaptation of small and medium-sized enterprises to flood risk. *Disaster Prevention and Management*, *21*(4), 474–488. doi:10.1108/09653561211256170

Wiedmann, T., & Minx, J. (2008). A Definition of " Carbon Footprint." In C. C. Pertsova (Ed.), *Ecological economics research trends* (pp. 1–11). Hauppauge, NY: Nova Science Publishers.

Wieland, J., & Schmiedeknecht, M. (2010). *Corporate Social Responsibility (CSR), Stakeholder Management und Netzwerkgovernence* (No. 31/2010).

Appendices

Appendix 1: Questionnaire

Reasons for the participation in the project UmweltPartnerschaft by the City of Hamburg

Page 1

Dear ladies and gentlemen,

Thank you for your interest in the survey about the reasons for your participation in the project UmweltPartnerschaft by the City of Hamburg.

To fulfill the questionnaire you need approximately 3 minutes. If you have any further questions, please do not hesitate to contact me, Heiko Fischer (h.fischer.1@student.rug.nl).

The survey will be used for my Master's thesis in spatial science at the University of Groningen. Please notice, that the results will be published comprehended and anonymised. It won't be possible to link your data to yourself.

Best regards,
Heiko Fischer

Page 2

1. **For which company are you working?** *

   Please name your company including the legal form (for example e. K., GmbH etc.)

2. **What industry is your company primarily associated with?**

3. **How many employees are working for your company?**

   Number of employees (incl. owner or managing partner)

4. **What is your function in the company?**

   - ○ Share holder
   - ○ CEO
   - ○ Share holder & CEO
   - ○ Employee
   - ○ Owner & CEO
   - ○ Owner
   - ○ Upper management
   - ○ Employee with focus sustainability
   - ○ Upper management with focus sustainability
   - ○

Page 3

5. **What are the programs your company participated?** *

Please indicate the programs, especially in the case of the environmental management systems ISO 50001 etc., just if your participated in the program due to the City of Hamburg.

Multiple replies are possible.

☐ "Alois" (www.alois-info.de)	☐ IHK-recycling exchange (http://www.ihk-recyclingboerse.de)
☐ Adaption to climate change	☐ ISO 14001
☐ Companies protecting resources	☐ ISO 50001
☐ Concept for heat supply of quarters	☐ Partnership for air quality & low-polluting mobility
☐ EMAS	☐ Quality association of environmentally friendly businesses
☐ Energetic modernization of building's envelope of non-residential buildings	☐ Renewable heating
☐ Environmental checks	☐ Visiting the energy-building centre
☐ Environmental friendly product development	☐ ZEWUMOBILPLUS
☐ HK-energy controller	☐ Ökoprofit
☐	

Page 4

6. **What were the reasons for the participation in the program 'Partnership for air quality & low-polluting mobility'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 5

7. **What were the reasons for the participation in the program Ökoprofit?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 6

8. **What were the reasons for the participation in the program ZEWUMOBILPLUS?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 7

9. **What were the reasons for the participation in the program 'Concept for heat supply of quarters'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

X

Page 8

10. **What were the reasons for the participation in the program 'Companies protecting resources'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 9

11. **What were the reasons for the participation in the program 'Environmental friendly product development'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 10

12. **What were the reasons for the participation in the program 'Environmental checks'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 11

13. **What were the reasons for the participation in the program 'Quality association of environmentally friendly businesses'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 12

14. **What were the reasons for the participation in the program ISO 50001?** *

Multiple replies are possible

- ☐ Current employees expect activities in this field. The company meets these expectations through the participation.
- ☐ The company becomes a healthier workplace through the participation in the program
- ☐ The company becomes a safer workplace through cleaner workplace
- ☐ The company becomes technical or social innovation leader through the participation
- ☐ The company expresses the values, visions or a strategic direction through the participation in the program
- ☐ The company gains access to new investors through the participation
- ☐ The company gains access to new markets or it enables the company to attract new customer
- ☐ The company improves the image of the company or a brand of the company
- ☐ The company meets the demands of the customer through the participation
- ☐ The company mitigates local consequences of climate change through the participation
- ☐ The company participated due to religious reasons
- ☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation
- ☐ The company prevents future regulations through the participation in the program
- ☐ The company protects distribution means and possesses through the participation in the program
- ☐ The company safes costs through participation
- ☐ The participation in the program increases the attractivity of the company for future employees
- ☐ The participation in the program increases the motivation of the employees
- ☐ The participation in the program protects the global environment
- ☐ The participation in the program protects the local environment
- ☐ The participation protects the health of the global population
- ☐ The participation protects the health of the local population
- ☐ Through the participation in the program the company gains access to subsidies etc.
- ☐ Through the participation in the programs, costs become more predictable for the company
- ☐ _____

Page 13

15. **What were the reasons for the participation in the program ISO 14001?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 14

16. **What were the reasons for the participation in the program IHK-recycling exchange (http://www.ihk-recyclingboerse.de)?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 15

17. **What were the reasons for the participation in the program 'HK-energy controller'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation
☐ The company becomes a healthier workplace through the participation in the program	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes technical or social innovation leader through the participation	☐ The company safes costs through participation
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company gains access to new investors through the participation	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	
☐	

Page 16

18. **What were the reasons for the participation in the program 'Renewable heating'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 17

19. **What were the reasons for the participation in the program 'Energetic modernization of building's envelope of non- residential buildings'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 18

20. **What were the reasons for the participation in the program EMAS?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 19

21. **What were the reasons for the participation in the program 'Adaption to climate change'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 20

22. **What were the reasons for the participation in the program ALOIS?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation in the program protects the local environment
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the global population
☐ The company meets the demands of the customer through the participation	☐ The participation protects the health of the local population
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company participated due to religious reasons	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation	
☐	

Page 21

23. **What were the reasons for the visit of the 'Energy-building centre'?** *

Multiple replies are possible.

☐ Current employees expect activities in this field. The company meets these expectations through the participation.	☐ The company prevents actual or future damage of the image of the company or a company's brand through the participation
☐ Durch das Programm schützt das Unternehmen die lokale Umwelt.	☐ The company prevents future regulations through the participation in the program
☐ The company becomes a healthier workplace through the participation in the program	☐ The company protects distribution means and possesses through the participation in the program
☐ The company becomes a safer workplace through cleaner workplace	☐ The company safes costs through participation
☐ The company becomes technical or social innovation leader through the participation	☐ The participation in the program increases the attractivity of the company for future employees
☐ The company expresses the values, visions or a strategic direction through the participation in the program	☐ The participation in the program increases the motivation of the employees
☐ The company gains access to new investors through the participation	☐ The participation in the program protects the global environment
☐ The company gains access to new markets or it enables the company to attract new customer	☐ The participation protects the health of the global population
☐ The company improves the image of the company or a brand of the company	☐ The participation protects the health of the local population
☐ The company meets the demands of the customer through the participation	☐ Through the participation in the program the company gains access to subsidies etc.
☐ The company mitigates local consequences of climate change through the participation	☐ Through the participation in the programs, costs become more predictable for the company
☐ The company participated due to religious reasons	
☐	

You have completed the survey. Thank you very much for your participation.

You can now close the window.

Appendix 2: Distributive data

Table 31: Frequency and % of motivation per characteristics of 'Target'

	Characteristic					
	Local community	N=24	**Companies**	N=78	**SMEs**	N=68
Motivation	**m**	**%**	**m**	**%**	**m**	**%**
Expectation of current employees	3	12.5	9	11.5	6	8.8
Meeting the demands of the customer	2	8.3	6	7.7	7	10.3
Religious reasons	1	4.2	0	0	0	0
Access to additional investors	0	0	6	7.7	1	1.5
Healthier working environment	4	16.7	15	19.2	8	11.8
Safer workplace through cleaner workplace	5	20.8	12	15.4	17	25.0
Mitigate local consequences of climate change	6	25.0	22	28.2	23	33.8
Predictable costs	5	20.8	10	12.8	11	16.2
Expresses the values, visions or a strategic direction	9	37.5	29	37.2	25	36.8
Attracts future employees	2	8.3	9	11.5	5	7.4
Improves the image	8	33.3	28	35.9	27	39.7
Protects global health	4	16.7	13	16.7	18	26.5
Protects local health	4	16.7	21	26.9	17	25.0
Protects global nature	4	16.7	27	34.6	23	33.8
Protects local environment	4	16.7	29	37.2	27	39.7
Technical or social innovation leader	2	8.3	10	12.8	5	7.4
Protects the image	1	4.2	6	7.7	4	5.9
Creates new market opportunities	6	25.0	6	7.7	4	5.9
Prevents future regulations	2	8.3	13	16.7	6	8.8
Safe costs	3	12.5	22	28.2	19	27.9
Access to subsidies	0	0	17	21.8	9	13.2
Protects distribution means and possesses	0	0	1	1.3	1	1.5
Motivation of employees	7	29.2	18	23.1	11	16.2

Table 32: Frequency and % of motivation per characteristics 'Mechanism'

	Characteristic							
	Consul-tation	N=68	**Financial support**	N=48	**Informing**	N=52	**Eco-labelling**	N=2
Motivation	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**
Expectation of current employees	6	8.8	4	8.3	8	15.4	0	0
Meeting the demands of the customer	7	10.3	3	6.3	5	9.6	0	0
Religious reasons	0	0	0	0	1	1.9	0	0
Access to additional investors	1	1.5	4	8.3	2	3.8	0	0
Healthier working environment	8	11.8	12	25.0	7	13.5	0	0
Safer workplace through cleaner workplace	17	25.0	10	20.8	7	13.5	0	0
Mitigate local consequences of climate change	23	33.8	18	37.5	10	19.2	0	0
Predictable costs	11	16.2	10	20.8	5	9.6	0	0
Expresses the values, visions or a strategic direction	25	36.8	20	41.7	18	34.6	0	0
Attracts future employees	5	7.4	6	12.5	5	9.6	0	0
Improves the image	27	39,7	17	35.4	19	36.5	0	0
Protects global health	18	26.5	9	18.8	8	15.4	0	0
Protects local health	17	25.0	12	25.0	13	25.0	0	0
Protects global nature	23	33.8	19	39.6	11	21.2	1	50.0
Protects local environment	27	39.7	19	39.6	13	25.0	1	50.0
Technical or social innovation leader	5	7.4	6	12.5	5	9.6	1	50.0
Protects the image	4	5.9	5	10.4	2	3.8	0	0
Creates new market opportunities	4	5.9	8	16.7	4	7.7	0	0
Prevents future regulations	6	8.8	8	16.7	7	7.7	0	0
Safe costs	19	27.9	19	39.6	6	11.5	0	0
Access to subsidies	9	13.2	15	31.3	2	3.8	0	0
Protects distribution means and possesses	1	1.5	0	0	1	1.9	0	0
Motivation of employees	11	16.2	12	25.0	13	25.0	0	0

Table 33: Frequency and % of motivation per characteristics 'Issue'

	Characteristic									
	Resou-rces	N=122	**Trans-port**	N=16	**Energy**	N=13	**Climate change**	N=10	**Adaption**	N=9
Motivation	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**
Expectation of current employees	11	9.0	4	25.0	2	15.4	0	0	1	11.1
Meeting the demands of the customer	11	9.0	1	6.3	1	7.7	2	20.0	0	0
Religious reasons	1	0.8	0	0	0	0	0	0	0	0
Access to additional investors	5	4.1	0	0	1	7.7	0	0	1	11.1
Healthier working environment	22	18.0	2	12.5	0	0	2	20.0	1	11.1
Safer workplace through cleaner workplace	30	24.6	0	0	1	7.7	3	30.0	0	0
Mitigate local consequences of climate change	41	33.6	3	18.8	3	23.1	0	0	4	44.4
Predictable costs	23	18.9	0	0	1	7.7	1	10.0	1	11.1
Expresses the values, visions or a strategic direction	48	39.3	6	37.5	3	23.1	3	30.0	3	33.3
Attracts future employees	13	10.7	2	12.5	1	7.7	0	0	0	0
Improves the image	47	38.5	5	31.3	1	7.7	5	50.0	5	55.6
Protects global health	28	23.0	4	25.0	2	15.4	0	0	1	11.1
Protects local health	30	24.6	7	43.8	2	15.4	1	10.0	2	22.2
Protects global nature	42	34.4	5	31.3	3	23.1	1	10.0	3	33.3
Protects local environment	46	37.7	7	43.8	2	25.4	3	30.0	2	22.2
Technical or social innovation leader	12	9.8	2	12.5	1	7.7	1	10.0	1	11.1
Protects the image	10	8.2	0	0	1	7.7	0	0	0	0
Creates new market opportunities	15	12.3	0	0	0	0	1	10.0	0	0
Prevents future regulations	15	12.3	2	12.5	1	7.7	1	10.0	2	22.2
Safe costs	36	29.5	0	0	4	30.8	2	20.0	2	22.2

	Characteristic									
	Resou-rces	N=122	**Trans-port**	N=16	**Energy**	N=13	**Climate change**	N=10	**Adaption**	N=9
Motivation	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**
Access to subsidies	22	18.0	2	12.5	2	15.4	0	0	0	0
Protects distribution means and possesses	1	0.8	0	0	0	0	1	10.0	0	0
Motivation of employees	28	23.0	4	25.0	2	15.4	1	10.0	1	11.1

Table 34: Frequency and % of motivation per characteristics 'Orientation'

	Characteristic							
	Monito-ring	N=37	**Develop-ment**	N=99	**Substi-tution**	N=7	**Awareness**	N=27
Motivation	**m**	**%**	**m**	**%**	**m**	**%**	**m**	**%**
Expectation of current employees	2	5.4	8	8.1	2	28.6	6	22.2
Meeting the demands of the customer	7	18.9	6	6.1	1	14.3	1	3.7
Religious reasons	0	0	1	1.0	0	0	0	0
Access to additional investors	2	5.4	4	4.0	0	0	1	3.7
Healthier working environment	9	24.3	13	13.1	2	28.6	3	11.1
Safer workplace through cleaner workplace	18	48.6	14	14.1	2	28.6	0	0
Mitigate local consequences of climate change	10	27.0	32	32.3	2	28.6	7	25.9
Predictable costs	8	21.6	16	16.2	1	14.3	1	3.7
Expresses the values, visions or a strategic direction	14	37.8	38	38.4	2	28.6	9	33.3
Attracts future employees	4	10.8	9	9.1	1	14.3	2	7.4
Improves the image	21	56.8	28	28.3	4	57.1	10	37.0
Protects global health	10	27.0	18	18.2	2	28.6	5	18.5
Protects local health	10	27.0	20	20.2	2	28.6	10	37.0
Protects global nature	10	27.0	32	32.3	3	42.9	9	33.3
Protects local environment	15	40.5	31	31.3	4	57.1	10	37.0
Technical or social innovation leader	6	16.2	7	7.1	1	14.3	3	11.1
Protects the image	2	5.4	7	7.1	1	14.3	1	3.7
Creates new market opportunities	4	10.8	11	11.1	1	14.3	0	0
Prevents future regulations	5	13.5	11	11.1	1	14.3	4	14.8
Safe costs	10	27.0	29	29.3	3	42.9	2	7.4
Access to subsidies	5	13.5	17	17.2	2	28.6	2	7.4
Protects distribution means and possesses	1	2.7	1	1.0	0	0	0	0
Motivation of employees	8	21.6	20	20.2	2	28.6	6	22.2

Table 35: Overall frequency and % of motivation

Motivation	Frequency	%
Expresses the values, visions or a strategic direction	63	9.2
Improves the image	63	9.2
Protects local environment	60	8.8
Protects global nature	54	7.9
Mitigate local consequences of climate change	51	7.4
Safe costs	44	6.4
Protects local health	42	6.1
Motivation of employees	36	5.3
Protects global health	35	5.1
Safer workplace through cleaner workplace	34	5.0
Healthier working environment	27	3.9
Predictable costs	26	3.8
Access to subsidies	26	3.8
Prevents future regulations	21	3.1
Expectation of current employees	18	2.6
Technical or social innovation leader	17	2.5
Attracts future employees	16	2.3
Creates new market opportunities	16	2.3
Meeting the demands of the customer	15	2.2
Protects the image	11	1.6
Access to additional investors	7	1.0
Protects distribution means and possess	2	0.3
Religious reasons	1	0.1

Appendix 3: Shapiro-Wilk Test

Table 36: Values Shapiro-Wilk-Test

Motivation	W	df	Sig.
Expectation of current employees	.806	18	.002
Meeting the demands of the customer	.761	18	.000
Religious reasons	.253	18	.000
Access to additional investors	.460	18	.000
Healthier working environment	.678	18	.000
Safer workplace through cleaner workplace	.599	18	.000
Mitigate local consequences of climate change	.767	18	.001
Predictable costs	.679	18	.000
Expresses the values, visions or a strategic direction	.788	18	.001
Attracts future employees	.704	18	.000
Improves the image	.811	18	.002
Protects global health	.824	18	.003
Protects local health	.696	18	.000

Motivation	W	df	Sig.
Protects global nature	.758	18	.000
Protects local environment	.732	18	.000
Technical or social innovation leader	.712	18	.000
Protects the image	.726	18	.000
Creates new market opportunities	.733	18	.000
Prevents future regulations	.742	18	.000
Safe costs	.682	18	.000
Access to subsidies	.518	18	.000
Protects distribution means and possesses	.373	18	.000
Motivation of employees	.813	18	.002

Appendix 4: Kruskal-Wallis-Tests

Table 37: Results Kruskal-Wallis-Test for 'Target'

Motivation	Chi-square	df	Asymp. Sig.
Expectation of current employees	0.620	2	.733
Meeting the demands of the customer	1.510	2	.470
Religious reasons	5.000	2	.082
Access to additional investors	1.205	2	.547
Healthier working environment	.570	2	.752
Safer workplace through cleaner workplace	1.097	2	.578
Mitigate local consequences of climate change	3.122	2	.210
Predictable costs	1.572	2	.456
Expresses the values, visions or a strategic direction	.901	2	.637
Attracts future employees	.508	2	.776
Improves the image	.608	2	.738
Protects global health	4.133	2	.127
Protects local health	.726	2	.696
Protects global nature	1.034	2	.354
Protects local environment	2.079	2	.354
Technical or social innovation leader	.249	2	.883
Protects the image	.787	2	.675
Creates new market opportunities	2.316	2	.314
Prevents future regulations	.230	2	.891
Safe costs	1.243	2	.537
Access to subsidies	2.732	2	.255
Protects distribution means and possess	.744	2	.689
Motivation of employees	.427	2	.808

Table 38: Results Kruskal-Wallis-Test for 'Mechanism'

Motivation	Chi-square	df	Asymp. Sig.
Expectation of current employees	1.386	3	.709
Meeting the demands of the customer	2.128	3	.549
Religious reasons	1.571	3	.666
Access to additional investors	.386	3	.943
Healthier working environment	2.546	3	.464
Safer workplace through cleaner workplace	3.221	3	.359
Mitigate local consequences of climate change	3.916	3	.271
Predictable costs	1.838	3	.607
Expresses the values, visions or a strategic direction	2.568	3	.463
Attracts future employees	1.075	3	.783
Improves the image	1.733	3	.630
Protects global health	5.090	3	.165
Protects local health	3.007	3	.391
Protects global nature	1.368	3	.713
Protects local environment	2.917	3	.405
Technical or social innovation leader	.503	3	.918
Protects the image	2.753	3	.431
Creates new market opportunities	2.349	3	.503
Prevents future regulations	1.299	3	.729
Safe costs	2.499	3	.476
Access to subsidies	3.215	3	.360
Protects distribution means and possess	1.154	3	.764
Motivation of employees	1.697	3	.638

Table 39: Results Kruskal-Wallis-Test for 'Issue'

Motivation	Chi-square	df	Asymp. Sig.
Expectation of current employees	3.957	4	.412
Meeting the demands of the customer	2.110	4	.716
Religious reasons	.417	4	.981
Access to additional investors	3.929	4	.416
Healthier working environment	3.898	4	.420
Safer workplace through cleaner workplace	3.830	4	.430
Mitigate local consequences of climate change	3.033	4	.552
Predictable costs	2.010	4	.734
Expresses the values, visions or a strategic direction	3.391	4	.495
Attracts future employees	3.094	4	.542
Improves the image	3.825	4	.430
Protects global health	3.195	4	.526
Protects local health	4.677	4	.322
Protects global nature	1.751	4	.782
Protects local environment	2.119	4	.714
Technical or social innovation leader	2.394	4	.664
Protects the image	2.960	4	.565
Creates new market opportunities	4.298	4	.367

Motivation	Chi-square	df	Asymp. Sig.
Prevents future regulations	3.612	4	.461
Safe costs	1.862	4	.761
Access to subsidies	2.150	4	.708
Protects distribution means and possess	.417	4	.981
Motivation of employees	2.523	4	.641

Table 40: Results Kruskal-Wallis-Test for 'Orientation'

Motivation	Chi-square	df	Asymp. Sig.
Expectation of current employees	3.237	3	.357
Meeting the demands of the customer	2.100	3	.552
Religious reasons	1.250	3	.741
Access to additional investors	1.176	3	.759
Healthier working environment	1.142	3	.767
Safer workplace through cleaner workplace	5.456	3	.141
Mitigate local consequences of climate change	2.274	3	.517
Predictable costs	2.463	3	.482
Expresses the values, visions or a strategic direction	1.368	3	.713
Attracts future employees	.735	3	.865
Improves the image	.242	3	.971
Protects global health	1.177	3	.759
Protects local health	.841	3	.840
Protects global nature	1.443	3	.695
Protects local environment	.913	3	.822
Technical or social innovation leader	.445	3	.931
Protects the image	2.917	3	.405
Creates new market opportunities	3.719	3	.293
Prevents future regulations	.058	3	.996
Safe costs	2.633	3	.452
Access to subsidies	1.747	3	.652
Protects distribution means and possess	.983	3	.805
Motivation of employees	.539	3	.910