‘Images of nature’
on the Lotseninsel

An advice about enhancing the process
to come to an integrated, balanced and well-accepted
concept of usage for the Lotseninsel

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Van Hall Larenstein - University of Applied Sciences

Leeuwarden, the Netherlands

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LIGHTHOUSE FOUNDATION
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VAN HALL LARENSTEIN
PART OF WAGENINGEN UR

LOTSENINSEL
Schleimünde

Front image: View on the Lotseninsel from the ferry (own image).

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A report carried out on behalf of the Lighthouse Foundation and
submitted in partial fulfillment of the requirements for the
Bachelor degree in Coastal Zone Management.

Supervisor: Marije Klinefelter-Busstra & Evelien Jager

September 2012

Foreword

This thesis in hand is written in partial fulfillment of the requirements for the Bachelor degree in Coastal Zone Management at the Van Hall Larenstein – University of Applied Sciences in Leeuwarden, the Netherlands. In addition, it is carried out on behalf of the Lighthouse Foundation.

The thesis was developed in the time period from March till September 2012. The field study was executed in the Kiel area and on Lotseninsel in Germany, between April and July 2011, while the elaboration was done in Cologne, Germany. The topic of this Bachelor thesis is heavily influenced by a lecture about 'images of nature' by Dr. Arjen Buijs from the Wageningen University in the Netherlands.

I would like to express my gratitude to Mr. Jens Ambsdorf, Mr. Jörg Grabo, and Mrs. Andrea Eckl of the Lighthouse Foundation for giving me this great opportunity to carry out my research project on the Lotseninsel. Furthermore, I want to thank my supervisors Mrs. Marije Klinefelter-Busstra and Mrs. Evelien Jager for giving me valuable feedback and support. Other important persons who deserve my gratitude are everybody who participated in the interviews and the surveys and thus conduced to this thesis, as well as Christoph, for his kind hospitality during my stay in Kiel, and my girlfriend Chrissie for her support, patience, and love.

Cologne, September 2012.

Christoph Hoppe

Abstract

The Lotseninsel is a small peninsula situated in the transition area of the Baltic Sea and the Schlei in Northern Germany. The mouth of the Schlei is an ecological important area and is thus protected under several conservation laws. The position of the Lotseninsel amid and surrounded by this ecological important area, makes it an important place. However, since it is the only part of the mouth of the Schlei which is not protected by law, it is also the only area which can legally be entered and used. This makes the Lotseninsel special and many stakeholders are thus interested in this small area. This results in an excessive demand and pressure on the resources and facilities of the Lotseninsel itself and the surrounding nature.

In order to change this and to prevent degradation it is necessary to integrate and balance the various interests. The *Lighthouse Foundation*, the owner of the Lotseninsel, made it thus to their aim to develop a concept of usage, which integrates and balances all the different interests and is well-accepted by the stakeholders, in order to manage the Lotseninsel in a sustainable way. However, the problem in this regard is the fact that more insight is needed to enhance the process to come to such a concept. This thesis wants to give assistance in that regard. Therefore, an analysis of 'images of nature' is conducted, which studies the points of view of stakeholders and the underlying factors that govern interests. The resulting images are compared and the obtained similarities and differences are used to detect compliances and conflicts with principles of sustainable development. Together, this knowledge is used to develop an advice which eventually helps to enhance the process to come to a concept of usage.

The study of 'images of nature' reveals that crucial similarities exist between the stakeholders, like the fact that especially remoteness is regarded as most valuable aspect of the Lotseninsel, and the common opinions to combine nature and tourism, to prevent overcrowding, and to enhance communication in the future. In addition, stakeholders have the similar belief that nature is fragile (and dynamic). Nevertheless, also differences are revealed, especially in regard to negative aspects of the Lotseninsel, the preferred form of management as well as the future form and level of tourism, nature conservation, aesthetic aspects, and activities. Furthermore, the degree of knowledge, awareness and involvement differs between the stakeholders.

All these similarities are complying with principles of sustainable development, while all the differences give rise to conflicts. Due to different opinions conflicts arise especially in respect to the principles to respect the carrying capacity, to protect the environment, as well as the principle of intra-generational equity, the principle of democracy and participation, and the requirements of information dissemination and promotion of sustainability. Furthermore, some of these conflicts are reinforced or mitigated by other differences respectively similarities.

The further elaboration of compliances and conflicts underlines that solutions must be developed to solve the conflicts. In turn, the compliances can be used as starting points or as assistance to solve the conflicts, but only if they are processed first. All of the described conflict resolutions especially focus on three aspects in which all the conflicts seem to be rooted. These aspects are information, communication, and participation.

Based on these results an advice is elaborate to enhance the process to come to a concept of usage. This advice splits the stakeholders into two groups. Unorganized stakeholders are addressed in a one-way manner and only in regard to the cornerstone, while organized stakeholders are involved in a two-way manner in all cornerstones.

In order to enhance information it is advised to provide information on the Lotseninsel and via internet, as well as to set up education programs. That way, stakeholders gain a similar level of knowledge and awareness. Organized stakeholders should not only be informed, like unorganized stakeholders, but should also be involved to compile and select the information which is disseminated later on. For that, communication and participation needs to be enhanced beforehand. In regard to both cornerstones as many stakeholders as possible, as well as a facilitator, who is objective and pushes the process forward, should be included. Communication can then be enhanced with help of discussion workshops, where information, opinions, and ideas are compiled and discussed. That way, understanding is facilitated and different interests are integrated, which can thus be balanced more easily. Participation should also be improved with help of discussion workshops as well as management meetings. Together with the benefit of the enhancement of communication, high-quality agreements and win-win situations can be formed. The benefit of participation at this point is the fact that the support for and quality of decision is improved.

The detected compliances can also be used to improve the cornerstones by assisting the problem resolutions. However, this is only advisable if they are processed beforehand by integrating all stakeholders and discussing and reconciling the smallest differences – or in other words by including the compliances in a separate, preceding communication and participation process

Since the three cornerstones are connected and since the improvements of one, benefits the improvements of the two, it is advised to improve and combine all cornerstones in conjunction, in order to solve the conflicts. Altogether, this eventually enhances the process to come to an integrated, balanced, and well-accepted concept of usage.

Management summary

Based on the study of 'images of nature' and the subsequent comparison with principles of sustainable development, three cornerstones are revealed which should be regarded as base to solve the conflicts derived from the comparison in order to enhance the process to come to an integrated, balanced, and well-accepted concept of usage.

Information

The cornerstone 'information' is necessary in order to solve conflicts which arise due to a lack of knowledge and awareness, like the problem that the stakeholders do not have a common knowledge about sustainability and about the aim of current development measures, as well as the fact that they are not aware of the restriction of resources and the necessity to prevent pollution on the Lotseninsel.

In order to create a similar level of knowledge in a sustainable way it is necessary to distinguish between two groups of stakeholders and address them differently. Organized stakeholders (like companies and organizations) are included in a two-way process to commonly compile and select the information which is later disseminated. Unorganized stakeholders (like visitors) should be approached only in a one-way manner by making information available to them. This can be done with help of signs, which contain information of the above described aspects and are set up at appropriate places on the Lotseninsel. Together with regular education programs, which should be offered for adults and children, these stakeholders can be thought about the philosophy of sustainability and other associated and alternating topics. All this information can also be linked with more information on the homepage of the Lotseninsel and the *Lighthouse Foundation* in order to make it available for all (unorganized and organized) stakeholders. In addition, information brochures should be used. With help of these measures it becomes possible to establish a common level of knowledge and awareness as well as a similar definition of sustainability.

The compliance between 'images of nature' and principles of sustainable development, which is based on a similar belief that nature is fragile (or fragile and dynamic), can be combined with all these measures because it underlines that stakeholders might be ecological responsible. Therefore, the information on the signs should address this responsibility. However, it is necessary to process the compliance beforehand with help of communication and participation to discuss and reconcile the small differences which exist in this regard. Furthermore, although these measures can be carried out by the *Lighthouse Foundation*, it is advised to improve communication with organized stakeholders in order to inform unorganized stakeholders already before they come to the Lotseninsel. Lastly, compiling and selecting information in conjunction with the organized stakeholders also requires a proper communication and participation.

Communication

The cornerstone 'communication' needs to be improved in order to solve tensions, disagreements, and misunderstandings between stakeholders, which arise for example between the different groups of visitors or in regard to the future form and level of tourism, nature conservation, and aesthetic aspects. Furthermore, communication is required to facilitate a mutual understanding, which is

necessary since stakeholders have different values and definitions of nature. Therefore, all organized stakeholders who have a stake in regard to these conflicts need to be included in regular discussion workshops, which are based on the principles of 'interactive policy making'. This means that interaction between the stakeholders takes place in order to establish high-quality agreements and win-win situations (Edelenbos/ Monnikhof, 2001). However, the cornerstone communication only focuses on the interaction. Furthermore, either a neutral external stakeholder or the *Lighthouse Foundation* should function as neutral facilitator to make the process more efficient. The *Lighthouse Foundation* should only be facilitator if they do not have a stake in regard to a certain conflict. If they still want to function as both, facilitator and stakeholder, 'interactive methodic working' is advised which gives the facilitator more possibilities to influence the process. During the discussion workshops, organizational tasks should be assigned to different stakeholders. Subsequently, the stakeholders can compile and discuss opinions and ideas as well as the information which is necessary for the first cornerstone.

Compliances between 'images of nature' and principles of sustainable development, like the common valuing of remoteness, the aesthetic preference for wild nature, as well as the common opinions to prevent overcrowding, to combine nature and tourism, or to improve communication in the future, can be used to assist the discussions in case they got stuck or lost their focus. They can help to remember stakeholders what they have in common. However, these compliances also include exceptions or do not include all stakeholders. Therefore, before they are used, they need to be processed by including all stakeholders and discussing and reconciling the smallest differences in a preceding communication and participation process. Together, all these measures lay the foundation for the improvement of participation.

Participation

The cornerstone participation is an important ingredient of sustainable development and is currently lacking in case of the Lotseninsel. Therefore, and in order to build up trust between the stakeholders as well as to establish a supported management, it needs to be improved. This can be done by building on the benefits of communication and by including as many stakeholders as possible from the beginning in regular management meetings. Just like in regard to the cornerstone communication, the principles of 'interactive policy making' respectively 'interactive methodic working' should be applied here as well. This also means that a neutral facilitator – either the *Lighthouse Foundation* or a neutral external stakeholder – must be included. However, while communication focuses on negotiations and compiles different opinions, ideas, and information, participation is used to make decisions. Therefore, during the meetings, the stakeholders should have at least influence in terms of collaboration and decision-making. That way, joint visions, ideas, and solutions can be considered and elaborated in order to eventually create high-quality agreements and win-win situations which are integrated, balanced, and well-accepted.

Several compliances, like the common valuing of remoteness, the preference for wild nature, and the idea to combine nature and tourism, can also be used to bring stakeholders together to create win-win situations. However, just like the other commonalities, these ones must also be processed first by including all stakeholders in a separate communication and participation process to discuss and reconcile even the smallest differences. Furthermore, with help of bottom-up approaches joint projects, like an exhibition, can be created to motivate stakeholders and to enhance their feeling of attachment and responsibility.

Connection

It is evident that the three cornerstones are closely connected and that the improvement of one, benefits the improvement of other cornerstones (cf. Figure 20). Therefore, it is not advised to deal with each one separately, but instead improve all three in conjunction in order to maximize their benefit. That way the conflicts with sustainable development principles can be solved in order to eventually enhance the process to come to an integrated, balanced, and well-accepted concept of usage.

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1. Introduction

In the north, barrier beaches and salt marshes.

Tidal flats and reed beds to the west,

the south the breeding grounds of terns.

The waves of the Baltic Sea at the beach.

This place has its own magic

(Lighthouse Foundation, 2012a).

This poetic description is about the Lotseninsel, the study area of this thesis, and tries to emphasize one important characteristic: the Lotseninsel, situated in the mouth of the Schlei, is surrounded by nature. Due to the high ecological importance great parts of this nature are protected by law. However, the Lotseninsel itself is not protected and is thus free accessible and useable. This in turn is the reason why many stakeholders are interested in this small area. However, until now, there is no secure management plan and the different interests are not balanced.

The *Lighthouse Foundation*, a German nonprofit organization and initiator of this thesis, bought the Lotseninsel in 2008 with the idea to create a sustainable future for this area. This idea of development reflects the statutes of this "foundation for the seas and oceans", which has the vision of a "just future for all human beings on our 'blue planet'". Furthermore, their mission is to "support integrated and sustainable development processes and responsible behavior to protect our marine environment" by "highlighting the interdependence of humans and the sea" (Lighthouse Foundation, 2012b). Therefore, in the case of the Lotseninsel, they want to create a concept of usage which integrates and balances the different interests and is accepted by every stakeholder. However, more information is needed to enhance the process to come to such a concept of usage. Therefore, the aim of this study is to derive more insight in this regard. In this context the following question is raised: "What advice can be given to enhance the process to come to an integrated, balanced, and well-accepted concept of usage, based on 'images of nature' of the stakeholders of the Lotseninsel, in order to manage the Lotseninsel in a sustainable way?"

In order to find an answer to this research question, a study about the 'images of nature' of the stakeholders is carried out by conducting interviews and a survey. This insight is compared with principles of sustainable development in order to detect compliance and conflicts. Subsequently, the outcome is used to develop strategies to align the points of view of stakeholders with the theory of sustainability. Finally, the advice elaborates and applies these strategies to the case of the Lotseninsel.

The thesis begins with a problem description, including a characterization of the area of study and an explanation of the theory of 'images of nature'. In addition, the problem, the aim, and the research questions underlying this research are highlighted. In the second section the methodology to answer the research questions is explained. Subsequently, in the third section, the results to the distinct sub questions are expounded. Based on these results, an advice is elaborated in the fourth chapter. The fifth chapter forms the final conclusion, and the thesis ends with a discussion. In the appendices, used material and additional results are attached.

2. Problem description

2.1.Study area

The Lotseninsel is situated in the mouth of the Schlei (in German 'Schleimündung'), on the border to the Baltic Sea in Northern Germany (cf. Figure 1). The Schlei is the biggest brackish water area in Germany. It is a long and shallow fjord which stretches for 42 km from the city of Schleswig to its 100m wide mouth directly at the Lotseninsel (Falbe, 2011). The today's mouth is not of natural origin, but the result of an artificial breach, built in 1796, while the natural mouth further north became silted (Lighthouse Foundation, 2012c). Therefore, the Lotseninsel is not, as the name implies, an island, but became through natural sand filling part of the Oehe peninsula round 50 years ago and is now its most southern tip (cf. Figure 2). This peninsula forms together with the southern Olpenitz peninsula a natural barrier between Baltic Sea and Schlei. Both peninsulas can be seen as spits.

Figure 1: General map of the location of the Lotseninsel (Google Maps, 2012, modified by the author)

Figure 2: Detailed map of the location of the Lotseninsel (Google Maps, 2012, modified by the author)

2.1.1. Ecological Importance

The whole Schleimündung has a high ecological importance, because many different ecosystems with different species can be found here. The Lotseninsel, amid and surrounded by this nature, thus becomes a very important place.

Due to wind and waves, the coastal areas on the east side of the spits are quite dynamic, while on the western side of the Oehe peninsula, in the calm and shallow bays of the Schlei, intertidal mudflats prevail and even the growth of salt marshes is supported. Other important habitats in this area are mussel beds and other forms of reefs as well as the lagoons which are formed when the tide is falling. Additionally, on the peninsulas, white and grey dunes can be found (Lighthouse Foundation, 2012d; MLUR, 2011). Furthermore, due to the decreasing salinity within the fjord, the Schlei forms a habitat for saltwater- and freshwater fish. If the Baltic Sea is calm even porpoises can be seen from the Lotseninsel (Lighthouse Foundation, 2012e).

The whole area also offers good opportunities for birds to rest, throughout the year. On the Oehe- and Olpenitz peninsula numerous bird species can be found which come here to breed, to feed or to rest. The shallow water areas, mudflats, and salt marshes provide a rich diversity of food for the birds. Since this area has an outstanding significance as breeding, feeding, resting and overwintering habitat, it is the most important bird area at the Baltic coast of the German state Schleswig-Holstein and also enjoys international significance. All this underlines that the whole area has a high ecological importance.

2.1.2. Legal protection

It is not surprising that due to the above described ecological importance, great parts of the *Schlei* are protected under several international and national laws.

The Schlei, including the Schleimünde and the shallow water area offshore, form an area which is *inter alia* protected under the *European Habitat Directive*[1] and the *European Bird Directive*[2], due to its precious varying habitat types and the occurrence of rare bird species (MLUR, 2011). Therefore, the Schlei is also part of the *NATURA 2000* network. Additionally, this whole area is a *Baltic Sea Protected Area (BSPA*) and thus also protected under the *HELCOM* treaty. The Oehe peninsula is also an area of the European *LIFE*-project '*BaltCoast*', which will run out in 2013. All these laws form a legal basis which prohibits degradation and requires that the area is preserved. Furthermore, a requirement of the *European Habitat and Bird Directive* and the *HELCOM* treaty is the implementation of a proper management plan which assures the preservation of the area (European Commission, 2012).

On national level, the Oehe peninsula and the Olpenitz peninsula form together with the surrounding shallow water the '*Naturschutzgebiet Schleimündung*', a nature reserve which is protected by the German Federal Conservation Law (the '*Bundesnaturschutzgesetz'*). This law prohibits entering the nature reserves without a certified guide. Furthermore, it is not allowed to visit the shallow water of the *Schleihaff* (between the Lotseninsel and Maasholm).

[1] FFH-Gebiet DE-1423-394 "Schlei incl. Schleimünde und vorgelagerte Flachgründe"
[2] EWG-Gebiet DE-1423-491 „Schlei"

At the moment, a management plan for this conservation area is set up by the authorities in charge. However, the Lotseninsel has a special position in regard to all these aspects of legal protection.

2.1.3. Lotseninsel

The Lotseninsel, although situated in the middle of the Schleimündung and its important ecosystems, is not part of any of the above described laws, since it is not a governmental area, but a private property which is open to the public. Therefore, it is neither obliged to legal conservation requirements nor included in a conservation management plan. In addition, it forms the only part of the peninsulas where it is not prohibited to disembark and enter the land (Benfeldt *et al*., 2008). This special status underlines the importance of this small area. Furthermore, the Lotseninsel forms the transition area to the protected Schleimündung, but also to the Baltic Sea. Many people thus come to the Lotseninsel and regard it as base to enjoy and use the nature of the Schleimündung.

Even though the Lotseninsel is only 8000 m² in size, the number of user groups is high (Lighthouse Foundation, 2008). The reasons for their interest and their visit are divers and comprise recreation, sport, culture, work, science, conservation, and others. Many visitors come during the summer months; from begin of May until October. Therefore, in the main season it can become quite busy here. Unfortunately, no exact census of visitors was carried out yet. According to the *Lighthouse Foundation* it is estimated that each year about 10000 people come with private sailing boats to the Lotseninsel (this number also includes round 15% motorboats). Additionally, every year averagely 15000 day visitors come with shipping companies, who offer day trips from the cities of Schleswig, Kappeln and Maasholm to the Lotseninsel. In the main season up to five trips per day are offered, with each ship having the capacity to carry up to 200 people. The Lotseninsel is also visited by averagely 600 water sportsmen/-women per year, who come here with their canoe, kayak, or surfboards (Ambsdorf, 2012).

Until now, there is no secure management plan or policy to balance the different interests and each stakeholder thus uses the island and its facilities by habit for his/her own advantage while barely taking into account the interests of other user groups. This behavior, reinforced by the crowd of visitors, leads to an excessive demand and pressure on the resources and facilities of the Lotseninsel and the surrounding nature (Lighthouse Foundation, 2009). For example, the supply of freshwater and sanitation is sometimes barely sufficient. Even though the Lotseninsel has its own small sewage plant and water treatment plan, the supply of freshwater and the disposal of sewage are restricted (Lighthouse Foundation, 2012f). If this restriction is exceeded, especially the disposal of sewage will be a problem, which likely affects the surrounding nature. Moreover, energy and food come from the mainland. Especially latter must be transported to the Lotseninsel by ship, which is a difficult logistical task. It is evident, that the transport of resources affects the surrounding nature of the Lotseninsel. In fact, all boats and ships in the area, but also some forms of water sports (e.g. jet-skis) lead to increased emission values and noise. Additionally, everything that comes onto the Lotseninsel must be taken back again. However, there is always some rubbish that stays on the Lotseninsel and finds its way in the surrounding nature.

It becomes evident that if this situation is left unchanged, it can have negative impacts on the Lotseninsel as well as on the sensitive ecosystems. On busy days, this impact can be sensed already now, because than the peaceful, secluded and natural ambience of the Lotseninsel wanes. This again can lead to a degradation of both, the quality of nature and the quality of the experience of users due to a changing character of the Lotseninsel.

Therefore, to change the current situation and thus prevent degradation, it is necessary to balance the different interests of the stakeholders of the Lotseninsel. However, this is not an easy task, due to the fact that every stakeholder has different interests and a distinct point of view. The different forms of recreation and sport as well as other interests, such as culture, economy, and conservation, inevitably lead to different ideas about use, management and development of the Lotseninsel and thus to possible conflicts between the stakeholders.

2.2.Images of nature

In order to get insight in the different interests, ideas, and points of view of the stakeholders, the theory of "'images of nature'" is applicable (Buijs, 2009a). This environmental-sociological/ psychological theory examines the meaning stakeholder ascribe to the nature, or as it is in this case to the Lotseninsel. This meaning is indicated in their interest in the Lotseninsel. In other words, 'images of nature' study the underlying factors that govern interest. These factors are the importance stakeholders attach to nature respectively to the Lotseninsel, their ideas about management and development, their perception and beliefs about what nature is and what not, and their experience and preference on the Lotseninsel. Additionally, for this project a vision about the future development of the Lotseninsel is included, which assesses the opinion stakeholders have about the future form and level of certain aspects, such as tourism and nature conservation.

2.3.Problem statement

As already mentioned, there is no secure plan or policy yet to balance the different interests on the Lotseninsel. If the situation is left unchanged, the stakeholders will keep using the Lotseninsel by habit for their own advantage. This will result in a growing demand and pressure on resources and facilities, what in return has negative impact on the Lotseninsel and the nature.

The *Lighthouse Foundation* is aware of this deficiency and made it to their aim to change this situation by developing a concept of usage which balances all the different interests. This concept should not only help to properly conserve natural resources, but also to secure and balance social, cultural, and economical needs and interests of the stakeholders. Furthermore, it should enhance the acceptance and support of the stakeholders in regard to the management and development of the Lotseninsel. It becomes evident, that by creating such a concept of usage, the *Lighthouse Foundation* implements their mission and supports a good example of sustainable development.

However, the problem here is the fact that the *Lighthouse Foundation* needs more insight to enhance the process to come to such an integrated, balanced and well-accepted concept of usage. On the one hand information about the exact interests and points of view of the stakeholders is required. This information is still scarce, but essential for the creation of a successful concept of usage. Since the points of view can vary and contradict with sustainable development, it might also become very difficult to set up a concept of usage. Therefore, and on the other hand, more insight in possibilities to realize a sustainable – or in other words an integrated, balanced and well-accepted – concept of usage must be obtained as well.

2.4.Research aim and research questions

In order to reach the aim set by *Lighthouse Foundation*, this thesis wants to create a base of knowledge which gives assistance to come to a concept of usage. Therefore, an analysis of the points of view of the stakeholders with help of 'images of nature' is carried out, as well as an analysis of principles and requirements of sustainable development. The subsequent aim here is the elaboration of an advice which enhances the process to come to an integrated, balanced and well-accepted concept of usage.

This research aim directly leads to the main research question:

What advice can be given to enhance the process to come to an integrated, balanced and well-accepted concept of usage, based on 'images of nature' of the stakeholders of the Lotseninsel, in order to manage the Lotseninsel in a sustainable way?

In order to find an answer to this research question, the underlying research questions are used:

1. What are the characteristics of the 'images of nature' of the stakeholders and where do they correspond with or differ from each other?
2. In which regard are the points of view (=characteristics of 'images of nature') of the stakeholders conflicting or complying with principles of sustainable development?
3. What solutions can be developed to align the points of view of the stakeholders with the principles of sustainable development in order to come to an integrated, balanced and well-accepted concept of usage?

The 'images of nature' and the principles of sustainable development are two forces which influence the process to come to a concept of usage. The outcome of this study helps to align these factors, in order to meet the aim of the Lighthouse Foundation and thereby their mission. The following figure displays the connection between the 'images of nature' and the principles of sustainability, the outcome of this research (the advice), and the aim and mission of the *Lighthouse Foundation* (cf. Figure 3).

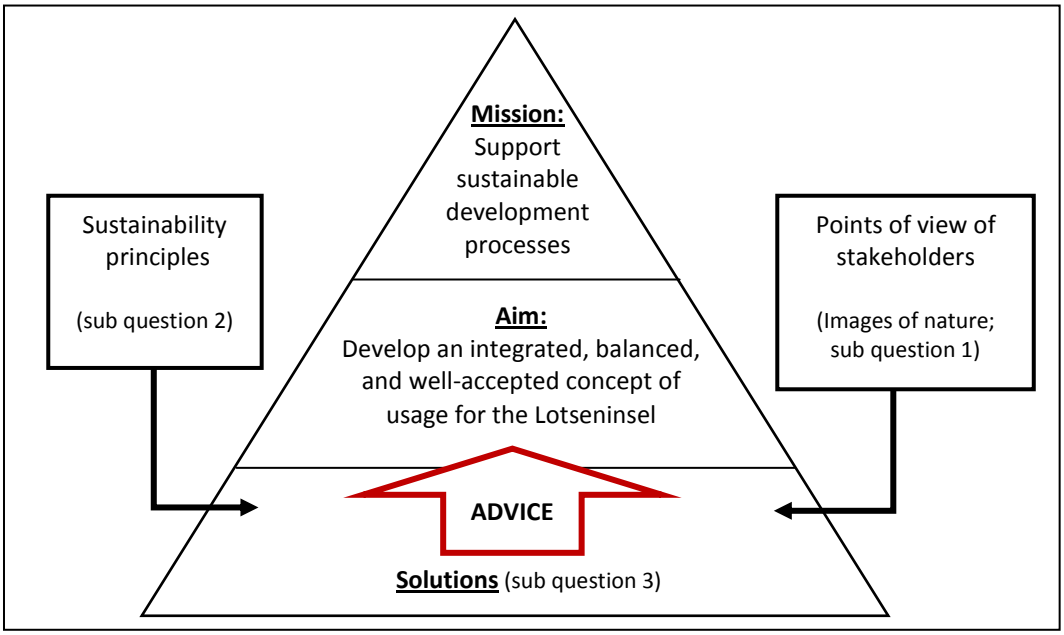

Figure 3: Connection of the different components of this research project

3. Methodology

In the following section the methods used to find answers to the sub questions are described. Each sub question is discussed in a separate paragraph, by first, stating the sub question, second, giving general (background) information about the respective question, third, describing the way of data collection, and fourth, explaining the manner of data analysis.

3.1. Analysis of 'images of nature' of the stakeholders

What are the characteristics of the 'image of nature' of each stakeholder and where do they correspond with or differ from each other?

3.1.1. General information

The first sub question of this study is about an analysis of 'images of nature', in order to understand the stakeholders' points of view in regard to the Lotseninsel and how these points of view constellate. Several concepts to define 'images of nature' were put forward by different authors. For this thesis, the concept from Keulartz, Van der Windt and Swart (2004) was used. Modifications of this concept, used in the dissertation of A. Buijs (2009a), were incorporated as well. Additionally, new modifications were made in order to adapt the concept to the case of the Lotseninsel. According to the concept from Keulartz, Van der Windt and Swart, an 'image of nature' has three dimensions – a normative, a cognitive, and an expressive element.

The normative criterion addresses general values and value-orientations. Values give an idea about the perception of stakeholders as well as the aspects they prefer in terms of nature, or as it is in this case of the Lotseninsel (Keulartz, Van der Windt, Swart, 2004). Value-orientations are expressions of values and improve their predictive strength (Manfredo, 2003). They consequently reflect which management of nature is desirable (Buijs, 2009b), respectively which management of the Lotseninsel is desirable.

The cognitive element originally deals with the belief and knowledge people have in regard to nature. The definition of boundaries of nature and the belief about attributes that control the processes in nature are important here (Keulartz, Van der Windt, Swart, 2004). In addition, the stakeholders' knowledge and awareness about the current situation on the Lotseninsel, their involvement in the management, as well as their interpretation of sustainability are assessed in this case.

The expressive dimension is about the aesthetic experiences of the beauty of nature, which is close connected with perception and valuing (Kay/Alder, 2005). People's preference is central and describes what kind of nature they experience as beautiful. Additionally, the experience of a personal importance of something particular on the Lotseninsel is assessed.

These three elements from the concept from Keulartz, Van der Windt and Swart (2004) were used in this study to create 'images of nature', but additionally, another dimension was added in this case. This is the vision stakeholders have about the future development of the Lotseninsel. This dimension is necessary in order to understand and take into account the ideas stakeholders have about the future of the Lotseninsel.

3.1.2. Data collection

The best way to gather information about the underlying factors or dimensions that determine 'images of nature' was to carry out an interview respectively a survey with the different stakeholders (Baarda, De Goede, 2006). The selection of stakeholders, who were included in this project, was done in consultation with the *Lighthouse Foundation.*

Organized stakeholders - such as companies, organizations, government agencies, etc. – were interviewed in order to create an 'image of nature'. For these stakeholders it was sufficient to interview a representative of the institution who stated the interests, principles and opinions of his/her institution. In total, 18 organized stakeholders were interviewed, one of whom was not willing to participate (the gastronomy *Giftbude*). Therefore, this stakeholder is excluded from the whole analysis. The interviews were conducted personally if the stakeholder was available. This was the case for twelve stakeholders. The remaining five stakeholders were interviewed by phone. An example of the interview form is enclosed in appendix I.

A survey was used to determine the 'image of nature' of unorganized stakeholders, such as tourists. Therefore, from the whole number of visitors a random sample of 235 people was surveyed. The optimal number of such a survey was 200 (Baarda, De Goede, 2006). The survey took place on the Lotseninsel and on the ferries to the Lotseninsel. An example of the survey form is enclosed in appendix II. In order to group the sample, the grouping variable "means of travel" was used. This way the sample could be divided into people who come with ferries, with private sailing boats, with private motorboats, or with canoes, kayaks, etc.

The form of the interviews was semi-structured, while the form of the surveys was structured. However, both questionnaires contained closed and open questions. The interviews contained more open questions, while the survey mainly had closed questions. The open questions supported the flexibility of the interviews in order to respond to the situation and the answers of the stakeholder. The closed questions enhanced reliability of the survey and the interview (Reulink, Lindeman, 2005). A mix of open and closed questions was reasonable, because the variety of questions with different forms encourages the willingness and the attention of the respondent and as a result improves the quality of the answers (König, 1973). All questions were set up in a way which tried to reduce the possibility of a social desirability bias. This phenomenon describes the tendency of person to answer a question in a way that will be viewed favorably by others. As counteraction, it was stressed that there is no 'right' or 'wrong' in the interview and the survey.

The questions of the interview respectively the survey focused on the different dimensions of the 'images of nature'. With the interview/ survey answers were given to the following questions:

- Which aspects of the Lotseninsel are regarded as valuable and which as negative?
- What kind of management is desirable for the Lotseninsel?
- What aspects of the Lotseninsel should be changed in the future?
- What kind of knowledge and definitions do stakeholders have about nature?
- What kind of knowledge do stakeholders have about the Lotseninsel?
- What kind of (aesthetic) preference do stakeholders have in regard to nature?
- How are stakeholders connected with the Lotseninsel in a personal way?

The first two questions looked at the normative dimension. The focus here was on values and value-orientations. The third question clarified the vision stakeholders have about the future development of the Lotseninsel. The next two questions identified the cognitive dimension by inquiring the knowledge and belief of the stakeholders. The last two questions were about the expressive dimension of 'images of nature'.

3.1.3. Data analysis

The interviews/ surveys were used to create an 'image of nature' for each stakeholder. First of all, the data derived from the survey was statistically prepared and analyzed. A detailed description of the statistical methods as well as the results of this statistical analysis and the subsequent determination of the 'image of nature' for visitors is enclosed in appendix III, IV, and V. In regard to interviews, the determination of an 'image of nature' was done straightforward (cf. appendix VI).

The interests and the different dimensions of the 'images of nature' of all stakeholders were examined with the help of the following interpretation guidelines.

The normative dimension was interpreted by looking at the stakeholders' most valued aspects, the aspects they remark as negative, and the form of management they prefer on the Lotseninsel. The questions 8, 9 and 12 of the survey and the questions 1, 2, 4, and 8 of the interview were used in regard to these three aspects. The stakeholders' answers to the questions were combined to determine the distinct values stakeholders' attach to the Lotseninsel. The values were categorized on base of the subdivision after Buijs (2009a), which differentiates between ecocentric, biocentric, weak anthropocentric and utilitarian values. On the one side of this margin are ecocentric values, which focus on whole ecosystems or habitats and demand no human interventions (hands-off policy). On the other side are utilitarian values where the services of nature for the society are central and where nature is intensively used and managed. In between are biocentric values, which especially value individual plants and animals and their wellbeing, and weak anthropocentric values which focus on aesthetic aspects of nature, such as idyll and beauty.

The visions about future development were analyzed with question 11 of the survey and the questions 6 and 7 of the interview. The focus lay on the aspects which the stakeholders would promote and improve, or reduce and not promote, or retain in the future. Since the vision of future development is closely connected with the normative dimension, the same subdivision was used to categorize the different ideas about development.

The cognitive dimension was analyzed by looking at the stakeholders' interpretation of sustainability, their definitions of nature, and their assumptions about the processes in nature. Additionally, their knowledge and opinion about the current developments on the Lotseninsel, and their degree of involvement was assessed in conjunction with this dimension. This all was done with the help of the questions 13, 14, 15 and 17 of the survey and the questions 5, 9, 10, 11 and 12 of the interview. Since different definitions of the concept of sustainability exist, the stakeholders could be categorized based on their individual interpretation. In order to categorize the definitions of nature, five categories were used (Buijs, 2009a: 45ff). These categories were:

- Elements (e.g. sea, sun, wind)
- Spontaneous nature (e.g. fish, game, wild plants, insects,)
- Productive nature (e.g. fields, aquacultures)

- Designed nature (e.g. gardens, city parks)
- Domesticated nature (e.g. cows, pigs, dogs, houseplants)

Depending on the number of categories which were regarded as nature, it was assessed whether a stakeholder has a very narrow (1 category), narrow (2 categories), an average (3 categories), a broad (4 categories), or a very broad definition of nature (5 categories). Furthermore, the stakeholders were categorized based on their assumptions of natural processes. The first contrasting assumption which was used was the thinking that nature can be either fragile or resilient. Another assumption that was applied was the idea that natural processes can be either in balance or dynamic (Fischer, Van der Wal, 2007). In order to inquire these assumptions, the stakeholders were asked about their belief how nature would react to a human intervention. Their knowledge and opinion about the current developments and their involvement in the management was assessed straight forward.

The expressive dimension was studied by inquiring what form of nature is experienced as more beautiful by the stakeholders. The stakeholders were categorized depending on their preference for rather wild or rather organized nature. Additionally, the personal particular importance of a certain aspect of the Lotseninsel was assessed. Here the categorization was straightforward, based on the different aspects which were regarded as personally important. The questions 10 and 16 of the survey and the questions 3 and 13 of the interview were used in this respect.

The knowledge about these dimensions was combined to create an 'image of nature' for each stakeholder. The following images emerged:

- The wilderness image
- The weak wilderness image
- The aesthetic image
- The weak functional image
- The functional image

The wilderness and the functional image of nature can be regarded as opposing ends of a scale. The aesthetic image forms the middle. These three images were borrowed from the concept of Keulartz, Van der Windt and Swart (2004). In the wilderness image pristine and secluded nature without human influence stands central. The nature has intrinsic values and need to take its own course. This image comprises a narrow definition of nature and the belief that nature is fragile. For people with a wilderness image wild nature is fascinating and very important. The aesthetic image sees the beauty and idyll as most important good of the nature which must be supported by the management. Here, the definition of nature is rather broad and nature is regarded as being fragile, but in balance. People with an aesthetic image rather prefer organized nature and often feel connected with nature. According to the functional image, nature is at the service of the humans and must be maintained in order to be productive. It holds the belief that nature is resilient and has a rather narrow definition of nature. Furthermore, this image focuses on the usage of nature and regards organized nature as more appealing.

It was difficult to clearly assign these three images based on the outcome of the interviews and surveys. Therefore, another grading was introduced. The weak wilderness image is a more open and flexible form of the wilderness image. It focuses on the benefit for nature and connects it with the usage for humans. In turn, the weak functional image still focuses on the usage of nature for humans, but also takes into account that nature must be preserved to secure this usage.

In the next step of the analysis, all the created 'images of nature' and the underlying dimension were compared in order to detect similarities and differences between the different points of view. The differences and similarities were assessed on base of the following aspects:

- Normative dimension
    - Differences and similarities concerning the aspects which stakeholders regard as most important and aspects they regard as negative.
    - Differences and similarities concerning the preferred form of management
- Vision of future development
    - Differences and similarities concerning the aspects which the stakeholders would promote, reduce, or retain in the future.
- Cognitive dimension
    - Differences and similarities concerning the knowledge about nature, sustainability and the Lotseninsel.
    - Differences and similarities concerning the degree of involvement.
- Expressive dimension
    - Differences and similarities concerning the aesthetic preference and the personal importance.

In order to detect similarities and differences, tables of analysis were created which listed the information of the 'images of nature' of every stakeholder in regard to the distinct dimensions. With help of these tables conclusions about similarities and differences could be made. However, if the answers of the stakeholders were too divers in regard to a distinct aspect of a certain dimension, the tables became unclear. If this was the case, a second table was created which only approached a distinct aspect of a certain dimension. The answers were clustered and categorized and could thus be listed very clearly. All these tables of analysis can be found in appendix VII.

The criterion to distinguish between a similarity and a difference was the frequency a certain answer was given in regard to a certain aspect. In case an answer was given by at least the two thirds majority of all stakeholders, it was concluded that an aspect contains one or several similarities. Since 21 stakeholders were included in this project, the two thirds majority was 14. However, if less than 21 stakeholders replied to a certain aspect (as it is for example the case in the vision of future development or if stakeholders were excluded due to insufficient data), the threshold for a two thirds majority was lower. Furthermore, it was necessary to distinguish between two kinds of similarities. In case that all stakeholders (100%) gave a similar answer to a certain aspect, the similarity was regarded as 'complete'. In turn, if the two-thirds majority was achieved but still at least one exception existed, it was talked about a 'partial' similarity. In contrast, if no answer of a certain aspect had a two thirds majority, it was concluded that the regarding aspect includes a difference.

The detected similarities and differences were arranged according to the dimensions they were found in. Together they could be used to give an answer to the first sub question.

3.2.Comparison with requirements of sustainable development

In which regard are the points of view of the stakeholders conflicting or complying with the principles of sustainable development?

3.2.1.General information

In 1987, the *United Nations World Commission on Environment and Development* (*WCED*) published the report 'Our Common Future', also known as 'Brundtland Report', which was the key for the rise of the concept of sustainable development (Kay/ Alder, 2005). Initially, it was defined by the WCED as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Wall/ Mathieson, 2006: 289). In 2005, at the *World Summit*, a supplementary notion of the three pillars of sustainability was added. This 'triple bottom line' – which balances economical, environmental and socio-cultural considerations - often forms the starting point to establish sustainability, even though it is not universally accepted and dissimilar interpreted (Kay/ Alder, 2005). In case of the Lotseninsel, this triple bottom line is indeed used as some kind of starting point. This becomes evident since the aim of the *Lighthouse Foundation* is the creation of a concept of usage that balances and integrates the different interests, and is well-accepted.

Nowadays, the idea of sustainability is the most dominant paradigm in development programs around the world (Kay, Alder, 2005). The reason for the popularity of this concept is its "universal appeal", which "promises something for everyone" and therefore attracts many different stakeholders (Carter, 2007: 212). However, the fact, that the idea of sustainability is open to interpretations, makes the concept also very controvertible. That implies the difficulty to operationalize an aim such as sustainable development. This is also the case for the sustainable development and thus the creation of a concept of usage for the Lotseninsel.

Luckily, there are different concepts and recommendations of sustainable development set up by different authorities, which state requirements and principles associated with sustainable development. In order to clarify if these principles of sustainable development are feasible in the case of the Lotseninsel, they were compared with the 'images of nature'.

3.2.2.Data collection

The outcome of the first sub question was used as base in order to answer this second sub question. Additionally, a literature study was conducted which examined the general principles of sustainable development. Especially the following books were used:

- *The politics of the environment* by Neil Carter (2007)
- *Coastal planning and management* by Robert Kay and Jacqueline Alder (2005)
- *Tourism: change, impacts and opportunities* by Geoffrey Wall and Alister Mathieson (2006).

Furthermore, more specific concepts and principles of sustainable (coastal) management were studied. It was chosen for the following guidelines:

- *Principles of sustainable development* by the United Nations Environmental Program (UNEP), according to the Rio Declaration on Environment and Development (1992).

- *Recommendations of the European Parliament and of the Council concerning the implementation of Integrated Coastal Zone Management in Europe* by the European Union (2002).
- *Guidelines for integrated coastal zone management* by Jan C. Post and Carl G. Lundin, published by the World Bank (1996).

3.2.3. Data analysis

The analysis to answer the second sub question comprised two parts. In the first step, the insight, derived from the literature study, was used to elaborate a list of sustainable development principles, which were applicable for the case of the Lotseninsel and in regard to the results of the first sub question. In the list, not only general principles of sustainable development, but also specific requirements of the European Union, the World Bank, and the UNEP, were included. Short definitions of the principles and requirements were elaborated with help of the above described literature. The final list of applied principles and requirements is enclosed in appendix VII.

In the second step, the results of the first sub question - similarities and differences of 'images of nature' - were brought together with the principles and recommendations of sustainable development in order to detect compliances and conflicts. Since some principles were connected with several similarities and/or differences, it was necessary to create tables, which clearly listed the connection between principles and similarities respectively differences. This way it became evident which similarities and differences of the 'images of nature' led to compliances or conflicts with which sustainable development principles. These tables are also enclosed in appendix IX.

In addition, if a principle was connected with several similarities and differences, the impact of the interaction between these connections, in terms of reinforcement or mitigation, was elaborated. If a similarity or difference could not be combined with any principle, only potential connections with other similarities and differences, again in terms of reinforcement and mitigation, were elaborated.

The conclusions about compliances and conflicts could subsequently be used to answer the second sub question.

3.3. Alignment of images and requirements

What solutions can be developed to align the points of view of the stakeholders with the principles of sustainable development in order to come to an integrated, balanced and well-accepted concept of usage?

3.3.1. General information

The mission of the *Lighthouse Foundation* is, as already mentioned, to "support integrated and sustainable development processes [...] to protect our marine environment" (Lighthouse Foundation, 2012b). This statement is also reflected in the aim to develop a concept of usage for the Lotseninsel which should be integrated, balanced and well-accepted.

The term 'integration' means that by using communication, negotiation and coordination skills the planning processes about how the Lotseninsel will be used will be enhanced to help stakeholders reach informed decisions. 'Balance' implies that different, competing uses of the Lotseninsel are

reconciled (Kay, Alder, 2005). Lastly, 'well-accepted' stands for the support of the stakeholders for decisions. All of these three terms are expressions of sustainability and address the stakeholders. Therefore, in order to incorporate these aspects into the design of the concept of usage, the points of view of the stakeholders must be aligned with the principles of sustainable development. By doing this it is possible to reconcile and solve the conflicts and furthermore benefit from the compliances with the principles of sustainable development.

3.3.2. Data collection

In order to answer this sub question, the outcome from the first and second sub question was used. Furthermore, information about usage of compliances and solutions of conflicts was gathered from several case studies and guidelines from the following literature:

- *The politics of the environment* by Neil Carter (2007)
- *Coastal planning and management* by Robert Kay and Jacqueline Alder (2005)
- *Tourism: change, impacts and opportunities* by Geoffrey Wall and Alister Mathieson (2006)
- *Burgers, beleid en natuur: tussen draagvlak en betrokkenheid (WOt-studies 9)* by Birgit Elands and Esther Turnhout (2009).

If this literature did not give information in respect to specific aspects of the preceding analysis, internet and literature research was conducted with focus on the concerned issue.

3.3.3. Data analysis

The outcome of the former two sub questions – the similarities and differences between the 'images of nature' of the stakeholders, which led to compliances respectively conflicts with principles of sustainable development – formed the base and were further elaborated to answer this third sub question.

The compliances with sustainability principles were elaborated in regard to their potential benefit and usage for the creation of a concept of usage. In turn, the conflicts were analyzed in terms of disadvantages and negative impacts on the development process and the future of the Lotseninsel. In addition, strategies and solutions were formulated to reconcile these conflicts in order to enhance the process to come to a concept of usage and to establish sustainable development. This was especially done by comparing case studies with the situation on the Lotseninsel. Furthermore, other principles and requirements of sustainable development were included which were regarded as useful to solve distinct conflicts.

The results created a base on which an advice about the enhancement of the process to come to a concept of usage could be elaborated.

4. Results

The following section describes the results of the analyses, which give answers to the sub questions. First, the similarities and differences of the 'images of nature' of the stakeholders are stated. Second, the results are compared with sustainability principles and compliances and conflicts are elaborated. In the third step, possible approaches to use compliances respectively to solve conflicts are stated. The outcome forms the base to create an advice and is used to reach the aim of this thesis.

4.1. Analysis of images of nature

Based on the analysis of the interviews and the survey, similarities and differences in the 'images of nature' of the stakeholders can be detected. This section displays the outcome of the comparison of the 'images of nature' and gives an answer to the first sub question:

What are the characteristics of the 'images of nature' of the stakeholder and where do they correspond with or differ from each other?

The stakeholders, whose 'images of nature' are compared, are:

- Lighthouse Foundation
- Verein Jordsand
- Naturnaher Wasserwanderplatz Schleimünde e.V.
- Harbor master
- City of Kappeln
- Municipality Maasholm
- Schlei Ausflugsfahrten
- Reisedienst Gerda Müller GmbH & Co. KG
- Kanuverband Schleswig-Holstein e.V.
- Unmarked space e.V.
- Event Nature e.V.
- Ostseefjord Schlei GmbH
- Naturpark Schlei
- Architect/ hydraulic engineer
- Painter
- Naturerlebniszentrum Maasholm (NEZ)
- Planungsbüro PLEWA

- Visitors, who arrive with ferries
- Visitors, who arrive with private sailing boats
- Visitors, who arrive with private motorboats
- Visitors, who arrive with canoe, kayak, etc.

Detailed descriptions of the 'image of nature' of each stakeholder are enclosed in appendix V and VI. In addition, tables of analysis which clearly list the stakeholders' images as well as answers to the several aspects of the different dimensions are attached in appendix VII.

4.1.1. Images of nature

A look at the distribution of 'images of nature' reveals that most of the stakeholders have a moderate standpoint in regard to the Lotseninsel, because out of 21 stakeholders, eight have a weak wilderness and seven a weak functional 'image of nature' (cf. Figure 4). This implies that the points of view of these stakeholders do not absolutely exclude each other, but instead converge in some regards. For example, stakeholders who focus on nature also take into account the benefit and importance of tourism and other forms of usage, and *vice versa*. The precise aspects in which the images converge are further elaborated in the following sections by looking at the similarities of the several dimensions. However, one stakeholder has a pure wilderness image, while three stakeholders have a pure functional image. It is likely that these contrasting images lead to several differences. Furthermore, two stakeholders have an aesthetic 'image of nature'. While all the other images focus on natural and functional aspects and are contrasting, these images focus on aesthetic aspects, such as beauty and ambience. However, only two stakeholders have this image, and in addition, aesthetic aspects do not necessarily exclude functional or natural aspects. Therefore, it is unlikely that these images lead to many differences.

Figure 4: Distribution of the ‚images of nature' of the stakeholders

Wilderness	Weak wilderness	Aesthetic	Weak functional	Functional
1	8	2	7	3

Altogether, this constellation of images leads to the assumption that there is a difference between the stakeholders, because no image reaches the two thirds majority (majority threshold = 14). Nevertheless, due to the many moderate standpoints, the situation on the Lotseninsel seems to be rather balanced. However, the 'images of nature' alone only give a surface impression of the situation, but do not give sufficient insight in the exact similarities and differences. A closer look at the dimensions underlying the images reveal though that similarities but also differences exist, even between stakeholders with the same 'image of nature'. The similarities and differences according to the different dimensions are elaborated in the next sections.

4.1.2. Normative dimension

In regard to the normative dimension, the assignment of values is more differentiated than in the images of nature. In total, six stakeholders attach ecocentric, one biocentric, two weak anthropocentric, and five utilitarian values to the Lotseninsel. In addition, seven intermediate forms of valuing appear (four ecocentric & weak anthropocentric; three ecocentric & utilitarian) (cf. Figure 5).

Figure 5: Distribution of assignment of values

Ecocentric	Biocentric	Weak anthropocentric	Utilitarian	Ecocentric & weak anthropocentric	Ecocentric & utilitarian
6	1	2	5	4	3

It is evident that this constellation underlines a difference between the 'images of nature' of the stakeholders, because no majority exists. In addition, the difference is reinforced by the fact that the

most contrasting forms of valuing – ecocentric and utilitarian values – have nearly the same as well as the highest share of votes. Although some intermediate, moderate forms of valuing come up, which try to combine contrasting aspects, this assignment of values gives a rather unbalanced and contrasting surface impression, in contrast to the final constellation of 'images of nature'. Nevertheless, a closer look at the aspects which lead to the assignment of these values – the most valued aspects, the negative remarks, and the preferred form of management – reveals one important, but partial similarity and two points of difference.

Similarities

The partial similarity of this dimension is the fact that the majority of stakeholders (17) especially regard the remote and secluded position of the Lotseninsel in the transition area of Baltic Sea and Schlei as most valuable aspect. This aspect can thus be regarded as main value.

Differences

However, since the valuing of seclusion and remoteness is a partial similarity, differentiations and exceptions must be made. Although most stakeholders (17) regard remoteness as most valuable aspect, their reasoning differs. Since many of them state more than one aspect, the main value 'remoteness' is often connected with one or two supplemental aspects. In total, 21 stakeholders mention 30 aspects which are arranged in seven different categories (cf. Figure 6).

Eleven stakeholders are rather appealed by remoteness along with the closeness to nature. Remoteness and naturalness thus seem to go hand in hand in their opinion. In contrast, four stakeholders are interested in remoteness, because it establishes certain opportunities of tourism and usage for them. Two other stakeholders value the simple fact that remoteness creates a certain degree of freedom. Again five other stakeholders not only value remoteness (and partly other aspects), but also aesthetic aspects, such as the ambience and the beauty of the Lotseninsel.

Despite the similarity in regard to the valuing of remoteness, these differences in respect to supplemental aspects can lead to a problem, since they are opposing each other. Furthermore, the different supplemental aspects explain the differences of the final assignment of values, since they are very determining and exclude opposing aspects (cf. Figure 5). The aspect 'remoteness' can thus be regarded as rather neutral without supplemental aspects.

Of course there are also stakeholders (4) who do not value remoteness. *Verein Jordsand* especially values nature. The *city of Kappeln* and the *municipality Maasholm* are only interested in the development of tourism and the situation of the coastal protection since these aspects also affects their own situation. Lastly, the *painter* only values sustainability aspects. Such aspects, like the diversity of interests, coexistence of humans and nature, and the sustainability potential, are also valued by *Verein Jordsand* and the *Lighthouse Foundation*. Although only few stakeholders choose these aspects and not the aspect 'remoteness', this outcome must be taken into account, since very important aspects of the Lotseninsel are represented.

Figure 6: Distribution of the different most valued aspects

Main aspect	Remoteness/ Seclusion				Nature	Tourism	Coastal protection	Sustainability aspects
Supple-mental aspect	Close to nature	Tourism/ usage	Freedom	Ambience/ beauty	-	-	-	-
	11	4	2	5	1	2	2	3

The first point of difference of this dimension arises in regard to the stated negative remarks since the stakeholders split into two groups (cf. Figure 7). On the one hand are 12 stakeholders who do not state negative remarks about the current situation of the Lotseninsel. On the other hand are four stakeholders who make one or various negative remarks about the Lotseninsel. In another two cases negative remarks only came up in the course of the interview, although the stakeholders first underlined that there are no negative aspects. Furthermore, in two groups of visitors, many people also state negative remarks. However, the percentage of visitors who do not mention negative aspects is still higher. All these opinions are approached like the other negative remarks (and do not contribute to the category 'no negative remarks'). It is also important to mention that the visitors who arrive with canoes are excluded from this result due to insufficient data.

The most common negative remarks are concerned with the problem of overcrowding and pollution and problem of the gastronomy *Giftbude* (cf. Figure 7). Other negative remarks are also the lack of cooperation, the bad state of the sanitary facilities, and the fact that too many changes are currently happening on the Lotseninsel. Of course, most stakeholders still do not make negative remarks. Nevertheless, already these few negative remarks can be a hint about potential problems, especially since several stakeholders focus on similar negative aspect. Therefore, such negative remarks must be taken into account, because it is likely that these stakeholders have a better insight in the situation of the Lotseninsel than others.

Figure 7: Distribution of stated negative remarks

No negative remarks	Overcrowding & pollution	Gastronomy	Other
12	4	4	3

The second point of difference of this dimension is the desired form of management of the Lotseninsel, since many different opinions exist (cf. Figure 8). It is important to distinguish between stakeholders who only focus on one general management approach, and stakeholders who only focus on one or more distinct aspects of management, such as aesthetics, accessibility, etc. In addition, again other stakeholders focus on both categories and combine one general management approach with one or more distinct aspects. Visitors who arrive with motorboats and with canoes are excluded from these results due to insufficient data.

Most stakeholders (9) prefer a middle course of management, with low impact, slight regulations and no massive interventions. Some of these stakeholders also focus on distinct aspects, such as accessibility (2), freedom (1), aesthetics (2), the preservation of the Lotseninsel as inside tip (1), and no focus on profit (1). Other stakeholders (5) call for no intensive use and strict regulations, like a maximum limit of visitors, in order to protect nature. One of these stakeholders wants to ensure accessibility additionally. In contrast, again other stakeholders (2) favor intensive use and reject

regulations, since in their eyes the capacity of the Lotseninsel will automatically regulate the numbers of visitors. Once again, one of these stakeholders also wants to ensure accessibility. It is evident that two these radical management approaches are strongly opposing each other, while the middle course of management can be regarded as moderate way. Lastly, two other stakeholders only prefer a management that ensures accessibility, while one stakeholder only favors a management that focuses on aesthetic aspects.

It is likely, that problems can arise especially in regard to the general management approaches. Even if the number of supporters is not high, the two radical opinions are likely to cause conflicts, since they are excluding each other as well as several distinct aspects. In contrast, it is unlikely that the distinct aspects of management (aesthetics, accessibility, etc.) cause conflicts, because they are not opposing and can be combined.

Figure 8: Distribution of opinions about preferred form of management for the Lotseninsel

General management approach			Focus on distinct aspect				
Middle course	No intensive use/ strict regulations	Intensive use/ no regulations	Ensure accessibility	Focus on aesthetics	No priority on profit	Ensure freedom	Preserve as inside tip
9	5	2	6	3	1	1	1

4.1.3. Vision of future development

Since no majority exists in regard to the vision of future development, it seems that this dimension leads to differences between the stakeholders (cf. Figure 9).Besides, points of differences are found in regard to six aspects of this dimension. Most of them focus on the role of tourism, conservation, and usage in the future. Nevertheless, ten stakeholders have a partly ecocentric partly utilitarian vision, which underlines that opposing aspects are combined. Additionally, complete and partial similarities arise in regard to four aspects of the vision of future development. However, exceptions must be made in the further elaboration of some of these similarities.

In total, similarities and differences arise in regard to ten different aspects, which were not predefined. The stakeholders make statements about one or several of these aspects. Only the groups of visitors could solely give their opinion about the aspects which were used in the survey (these aspects are tourism, nature conservation, and different activities). Due to the fact that not every stakeholder makes a statement about every distinct aspect, the majority threshold varies per aspect.

Figure 9: Distribution of the assignment of the general vision of future development

Ecocentric	Weak anthropocentric	Utilitarian	Ecocentric & weak anthropocentric	Ecocentric & utilitarian
2	2	6	1	10

Similarities

The first similarity is the fact that eight stakeholders want to promote the combination of tourism and nature in order to create possibilities for people to experience and understand nature. That way, tourism and nature conservancy are both promoted. Every stakeholder who made a statement in this regard (8) wants to promote this combination (cf. Figure 10). Therefore, it can be said that this is a complete similarity. In addition, the similarity also explains the fact that ten stakeholders have a partly ecocentric partly utilitarian vision of future development (cf. Figure 9).

The second similarity creates a general framework of tourism in the future, because eight stakeholders want that overcrowding is prevented in the future. It is a complete similarity because it is based on the fact that all stakeholders who made a statement in this regard (8), have the same opinion (cf. Figure 10).

A third, also complete similarity arises, because six out of six stakeholders agree unanimously that cooperation and communication between the actors must be improved in the future (cf. Figure 10). However, this similarity also implies that the current cooperation is insufficient, due to a lack of information and participation. These problems are elaborated in the cognitive dimension (cf. section 4.1.4.).

The fourth similarity is the fact that five stakeholders agree that noisy activities, such as motorboats, do not fit the ambience. Therefore, this activity should be reduced. Only *Wasserwanderplatz Schleimünde e.V.* and the harbor master are against a reduction and instead want to retain the current situation. Therefore, it is important to underline that this is a partial similarity.

Figure 10: Aspects of the vision of future development which lead to similarities

	Combination of nature & tourism	Overcrowding	Cooperation	Motorboats
Promote/ improve	8	0	6	0
Reduce/ prevent	0	8	0	5
Preserve current situation	0	0	0	2
Number of stakeholders	8	8	6	7
Threshold majority	5	5	4	5
Conclusion	**Similarity**	**Similarity**	**Similarity**	**Similarity**

Differences

Despite the first and second similarity – the combination of nature and tourism and the prevention of overcrowding – the elaboration of the precise role of tourism and nature in the future still raises points of differences.

An important point of difference comes up due to disagreement in regard to the future form and level of tourism (cf. Figure 11). Only three stakeholders want to retain the current situation. The remaining stakeholders who have an opinion in this regard split into two contrasting groups. On the one hand are eight stakeholders, who are in favor of promotion of tourism. They want to improve the marketing, establish new buildings (e.g. a souvenir shop, more sanitary facilities, or a longer pier), and/or new touristic services (e.g. a better freshwater provision, more services for day visitors, a fire place, etc.). On the other hand are three stakeholders who are against the promotion of tourism in the future. Especially *Verein Jordsand* fears that the promotion of marketing attracts too many

visitors and leads to overcrowding. For the same reason, this stakeholder neither wants more buildings nor more touristic services on the Lotseninsel. Furthermore, *Verein Jordsand* is also against an expansion of moorings, while especially many visitors want to promote sailing and other forms of water sport on the Lotseninsel. Although the number of stakeholders, who are against a promotion of tourism, is low, they have a big say, due to the influence of *Verein Jordsand,* one of the most important stakeholders. This point of difference can thus become a trouble spot.

Nature conservation is another important point of difference in the vision of future development of the stakeholders (cf. Figure 11). Five stakeholders want to promote nature conservation, while four stakeholders do not want more nature conservation. Instead they want to retain the current situation of conservation, because they are afraid that their freedom might be curtailed in the future. This difference can also become a trouble spot, since the opposing parties have a similar number of supporters and since two very important stakeholders with much influence are involved (*Verein Jordsand* and *Wasserwanderplatz Schleimünde e.V).*

In regard to aesthetic aspects a comparable difference arises, but with less stakeholders involved (cf. Figure 11). Two stakeholders (harbor master*, Kanuverband*) want to preserve the idyll, beauty and simple ambience of the Lotseninsel. Although the harbor master wants to retain these general aesthetic aspects, he also states that minor aesthetic aspects can be promoted. In contrast, the *Ostseefjord Schlei GmbH* would change the simple ambience of the Lotseninsel into something more professional and exclusive.

Figure 11: Different opinions in regard to the future form and level of tourism, conservation, and aesthetics

	Tourism (services, buildings & marketing)	Nature conservation	Aesthetics, ambience
Promote/ improve	8	5	1
Reduce/ prevent/ change	3	0	1
Preserve current situation	3	4	2
No. stakeholders	14	9	4
Threshold majority	9	6	3
Conclusions	Difference	Difference	Difference

In regard to the future form and level of several activities three points of differences arise as well (cf. Figure 12). First, all the different groups of visitors would reduce cultural events, because it is regarded as out of place. This stands, of course, in contrast to the *unmarked space e.V.*, who wants to promote cultural aspects, like the festival. Second, sailors and water sportsmen want to reduce the frequency of ferry landings, while stakeholders who rely on this service are against a reduction (shipping companies*;* visitors who arrive with ferries & motorboats*)*. Third, people who arrive with ferries want to reduce water sports aspects, while sailors and water sportsmen are against this.

It becomes apparent that there are tensions between the different groups of visitors since they want to support their own favored aspect while reducing the aspects which are not important to them, but to other visitor groups. Such conflicts between stakeholders are critical, disregarding the number of stakeholders who are involved.

Figure 12: Different opinions in regard to the future form and level of several activities

	Cultural events	Ferry service	Water sports/ sailing
Promote/ improve	1	1	3
Reduce/ prevent/ change	4	2	1
Preserve current situation	2	3	2
No. stakeholders	7	6	6
Threshold majority	5	4	4
Conclusions	Difference	Difference	Difference

4.1.4. Cognitive dimension

Within the cognitive dimension of the 'images of nature' of the stakeholders, only one partial similarity and four differences arise.

Similarities

The only similarity in this dimension is the stakeholders' belief about nature. In total, four different beliefs appear. Each stakeholder has the belief that nature is either fragile or resilient. In addition, several stakeholders fill in this belief with the idea that nature is dynamic (cf. Figure 13).

The majority of stakeholders (18) think that nature is fragile and that interventions have a severe impact. Twelve of these 18 stakeholders additionally hold the belief that nature is dynamic and will change its form after interventions.

Although nearly every stakeholder agrees here, three stakeholders think totally different (*Wasserwanderplatz Schleimünde e.V., municipality Maasholm).* In their eyes nature is resilient and can tolerate interventions. One stakeholder (*Event Nature e.V.*) also holds the belief that nature is resilient and dynamic. It can tolerate interventions and can quickly adapt to new situations. Therefore, it is talked of a partial similarity. However, most stakeholders believe that nature is fragile (and dynamic). This similarity means that most stakeholders have the same idea about the impact of interventions and development measures on nature.

Figure 13: Distribution of different beliefs about nature

Fragile	Fragile & dynamic	Resilient	Resilient & dynamic
18	12	3	1

Differences

In regard to knowledge about the current situation, the first point of difference can be found. The stakeholders split into three groups and are either pleased (6), skeptical (9), or do not make any statements (6). The stakeholders, who are pleased with the current situation, also regard the work of the *Lighthouse Foundation* as very beneficial. In contrast, the stakeholders, who are skeptical, do not understand the ideas and aims behind current projects, measures, and developments. Several development and projects are thus eyed with skepticism and are not supported. An example is the removing of the *Regosa rose (Rosa rugosa).* The idea behind this project is the substitution of this invasive plant with the regional *marram grass (Ammophila arenaria)*. However, since some stakeholders do not know that this is an invasive plant, they are skeptical towards this project. This

can become a problem, especially since the number of stakeholders who are skeptical is larger compared to the groups.

A look at the second difference of the cognitive dimension illustrates that interpretations of sustainable development differ among the stakeholders (cf. Figure 14). Eight stakeholders state that this concept is not understood and that they have no information what a sustainability development comprises. The other stakeholders know what sustainability means, but have different interpretations. Two stakeholders interpret it as the preservation of nature. Five other stakeholders regard the balancing and combination of nature and humans needs and the associated involvement of people (to experience nature) as very important. One stakeholder only focuses on low-impact tourism, and yet another one only on the form of planning. Intergenerational equity is only mentioned by two stakeholders. Only one stakeholder - *PLEWA* - states that sustainable development tries to align aspects of economy, nature and society and has thus a similar interpretation as the *Lighthouse Foundation*. This is not surprising since these two stakeholders already worked together. This all makes evident that there is no common definition of the concept of sustainable development, which hampers the communication in regard to sustainable development.

Figure 14: Distribution of different interpretations of the concept of sustainability

No idea	Preserve nature/ no overexploitation	Balance & combine nature & humans	Intergenerational equity	Low-impact tourism	Long term planning	Align PPP
8	2	5	2	1	1	2

In regard to the definitions of nature, the third difference appears. Depending on the number of categories the stakeholders regard as nature, they can be grouped. Most of the stakeholders split into two opposing groups (cf. Figure 15). On the one hand are ten stakeholders with very broad definitions of nature who regard all five categories as nature. On the other hand are seven stakeholders who have narrow definitions of nature and mostly regard the categories spontaneous nature and elements as nature. In addition to that, there are two stakeholders who have an average definition and regard three categories as nature. Lastly, there are also two more stakeholders who regard four categories as nature and therefore have a broad definition of nature. This all makes evident that the stakeholders define nature differently and have a different idea which form of nature is most beneficial for the Lotseninsel and which not.

Figure 15: Distribution of different definitions of nature

Very broad definition (5 categories)	Broad definition (4 categories)	Average definition (3 categories)	Narrow definition (2 categories)
10	2	2	7

The fourth difference arises due to the fact that different stakeholders are differently involved in the management process of the Lotseninsel (cf. Figure 16). Depending on the degree of their involvement they can be categorized into four groups. On the one hand are five stakeholders who think that they are sufficiently involved in the management. The *Lighthouse Foundation* is of course also involved, since it is the owner of the Lotseninsel. On the other hand are two stakeholders who find that they are insufficiently or restrictedly involved and nine stakeholders who are not at all involved. In addition, another four stakeholders are also not involved, but they are also unwilling to get involved. However, the statement of the *Lighthouse Foundation* stands in contrast to this result,

because it underlines that all stakeholders are invited to get involved in the development process, but do not use this opportunity. This different perception and the fact that most stakeholders think that they are not involved, stress that a difference exists in this regard.

Figure 16: Distribution of different degrees of involvement

Involved	Insufficiently/ restricted involved	Not involved	Not involved (and unwilling to get involved)
6	2	9	4

4.1.5. Expressive dimension

In regard to the expressive dimension one partial similarity and one difference can be found.

Similarities

One similarity is the fact that most of the stakeholders have a similar aesthetical experience of nature. In regard to the choice between wild or organized nature, the majority of stakeholders (16) chose for wild nature (cf. Figure 17). Nevertheless, it is a partial similarity, since the *Wasserwanderplatz Schleimünde e.V.* finds organized nature more appealing, while three others cannot decide between the two forms and like both (*Reisedienst Müller GmbH, city of Kappeln, Ostseefjord Schlei GmbH*). However, this similarity makes evident that most stakeholders agree on the form of nature they would like to have on the Lotseninsel.

Figure 17: Distribution of preference for certain form of nature

Wild nature	Organized nature	Both
16	1	4

Differences

A difference becomes apparent in regard to a particular personal importance (cf. Figure 18). While most stakeholders (9) do not mention a personal importance, the remaining stakeholders state many different aspects, which can be categorized into three groups. With exception of visitors with sailing boats, every stakeholder only mentions aspects of one distinct category. Four stakeholders state that the Lotseninsel as a whole is important (*Lighthouse Foundation, unmarked space e.V.*, architect*, NEZ*). Other stakeholders only attach a particular personal importance to distinct facilities of the Lotseninsel (like Giftbude or the lighthouse) (*Wasserwanderplatz Schleimünde e.V., shipping companies, visitors with sailing boats*). Again other stakeholders regard distinct attributes as personally important, such as the ambience, simplicity or the silence (harbor master*, Verein Jordsand, Event Nature e.V., PLEWA*, visitors with sailing boats).

Figure 18: Distribution of differences in particular personal importance

Nothing	Island as a whole	Distinct facilities	Distinct attributes
9	4	4	5

4.1.6. Conclusion

The analysis of the 'images of nature' reveals that the stakeholders' images differ. However, they also seem to be balanced, since most stakeholders have a moderate (and not radical) point of view.

However, a closer look at the dimensions underlying the images is necessary, in order to figure out the exact similarities and differences between the images.

In regard to the normative dimension, although the assignment of values differs strongly, one important, but partial similarity comes up, because many stakeholders especially value the remoteness of the Lotseninsel. Nevertheless, differences arise as well, since they also value different, opposing supplemental aspects. One point of difference of this dimension is the fact that some stakeholders do not state negative remarks, while others especially mention the problem of pollution, overcrowding, and gastronomy. Furthermore, a point of difference in this dimension deals with the preferred form of management on the Lotseninsel, because ideas about this management differ strongly and partly exclude each other.

Although the vision of future development differs between stakeholders, several similarities can be found. One complete similarity is the idea that nature and tourism are not opposing forces, but need to be combined in the future. Another complete similarity is the fact that the stakeholders also agree on the aim to prevent overcrowding in the future. Furthermore, the third complete similarity reveals that many stakeholders agree that cooperation and communication must be enhanced in the future, since the current situation is not adequate. A partial similarity arises since few stakeholders agree that motorboats should be reduced. However, despite these similarities, the exact form and level of tourism, nature conservation, and aesthetic aspects, lead to differences. Additionally, tensions arise between the different groups of visitors in regard to several activities. The different groups want to promote activities that are important to themselves, while reducing aspects that are only important to other visitor groups.

In respect to the cognitive dimension, one partial similarity arises since most stakeholders share the belief that nature is fragile (and dynamic). In contrast, differences arise since the stakeholders have a different level of knowledge and awareness. Therefore, their interpretation of the concept of sustainability differs, just like their understanding of ideas behind current development projects, and their definition of nature. Another difference is the fact that the stakeholders are differently involved in the management process.

The expressive dimension contains the partial similarity that most stakeholders prefer wild nature more than organized nature. In contrast, differences arise since the stakeholders regard different aspects of the Lotseninsel as personally important.

In the next section, these results are compared with principles of sustainable development in order to reveal compliances and conflicts.

4.2.Comparison with requirements of sustainable development

In the following section, the similarities and differences found in the analysis of 'images of nature' are compared with a list of different principles, characteristics, and requirements of sustainable development, in order to detect compliances and conflicts. This way an answer is given to the second sub question:

In which regard are the points of view of the stakeholders conflicting or complying with the principles of sustainable coastal management?

The found conflicts and compliances are categorized according to the similarities and differences of the distinct dimensions of 'images of nature' they are associated with. The list of principles and tables, which compare the different principles with the similarities and differences, are enclosed in appendix VII and IX.

The different 'images of nature' of the stakeholders do not give sufficient details in order to figure out conflicts and compliances. Therefore, a closer look at the underlying dimensions is necessary.

4.2.1.Normative dimension

In this dimension, the similarity leads to compliance with principles of sustainable development. However, the exception discovered in regard to this similarity weakens the compliance, and in addition, gives rise to conflicts, just like the differences which are also found in this dimension.

Similarities

The analysis of 'images of nature' implies that a partial similarity exists in regard to the most valued aspect of the Lotseninsel. Nitin Desai, the economic advisor of the Brundtland Commission, states that "values underlying the concept of sustainability are critical" for a successful sustainable development (Kay/ Alder, 2005: 17). This means that in case of disagreements between stakeholders in regard to values and valued aspects, the process to establish sustainable development becomes more difficult. Since most stakeholders especially value the remoteness of the Lotseninsel, it can be said that this similarity is complying with that important characteristic of sustainable development. However, it is important to underline that the compliance is also weakened by differences which exist in this regard.

Differences

Despite the similarity that most stakeholders value the remoteness of the Lotseninsel, the final assignment of values underlines that they nevertheless attach different values to the Lotseninsel, since they also value supplemental aspects (such as nature, tourism, aesthetics, etc.) beside the main aspect 'remoteness'. This different valuing of supplemental aspects and the associated different assignment of values are conflicting with the characteristic of 'critical values' and are thus weakening the above described compliance.

In regard to the first difference of this dimension, the negative remarks which are brought forward mainly focus on pollution and overcrowding. This leads to the assumption that the existing resources and facilities are currently overexploited (at least according to several stakeholders). In other words, the carrying capacity is exceeded. This conflicts with the premise of sustainable development that

the carrying capacity must be respected. This means that the limitations, such as the maximum number of people an area and its resources can sustain, must not be exceeded (Wall/ Mathieson, 2006). However, since only few stakeholders state these negative remarks it is likely that this is currently a rather weak conflict. It can become stronger in the future though, since it is also reinforced by several other conflicts.

In regard to the different opinions about the desired form of management, some management ideas stand in conflict with several sustainable development characteristics. The management ideas that are in favor of an intensive use and against the implementation of regulations, such as a maximum limit for visitors, are obviously conflicting with the precondition that the carrying capacity must not be exceeded. Such management approaches thus also reinforce the weak conflict which is based on the few negative remarks about overcrowding. The management that only wants the Lotseninsel to remain open to the public can also become a threat to this principle. In addition, these desired forms of management can easily infringe with the precautionary principle (European Union, 2002; UNEP, 1992). This principle stresses that a "lack of full scientific certainty should not be used as reason for postponing cost-effective measures [and regulations] to prevent environmental degradation" (Carter, 2007: 222). In case of the Lotseninsel it means that regulations of the number of visitors should not be rejected solely with the explanation that the Lotseninsel will probably automatically regulate this number (Hoffmann, 2012). Furthermore, other opinions of management only focus on one distinct aspect, such as aesthetics, accessibility, or freedom. Since these ideas only focus on one distinct aspects are, they are in conflict with the principle of the triple bottom-line, which underlines the balancing of economical, environmental and socio-cultural considerations (Kay/ Alder, 2005).

4.2.2. Vision of future development

In the vision of future development, the four similarities are in compliance with several sustainable development principles. However, it is important to underline, that these similarities, which envision the future, also imply that the current situation might not be in compliance with sustainability. In addition, the four points of difference of this dimension lead to conflicts with several principles.

Similarities

The analysis of the visions of future development reveals the complete similarity that some stakeholders do not regard economy and nature as opposite forces, but instead want to combine tourism and nature protection in the future in order to create possibilities for tourists to experience and understand nature. This idea is complying with an important requirement of sustainable development. According to Reid (1995), the integration of conservation and development is in particular an important component of sustainable development (cf. Kay, Alder, 2005). It means that not trade-offs between economical growth and environmental protection should take place, but instead that a balance between these two aspects is maintained (Carter, 2007; Post/Lundin, 1996).

The second complete similarity is the fact that many stakeholders agree on the aim that overcrowding and overexploitation must be prevented in the future. This opinion complies with the requirement of sustainable development that the carrying capacity of the ecosystem must not be exceeded (Carter, 2007). This aim thus also weakens the conflicts with the carrying capacity, which are based on several negative remarks as well as management ideas (cf. section 4.2.1.). In addition, the aim to prevent overcrowding also complies with the principle to protect the ecosystem, which

requires that that the ecosystem must be protected "[…] through prevention of habitat destruction, pollution and overexploitation" (Post/Lundin, 1996: 5: point 2).

The third complete similarity underlines that many stakeholders want to improve communication and cooperation in the future. This implies, however, that the current level of communication and cooperation is insufficient and is hence conflicting with two principles: policy integration and participation. The principle of participation, which is also associates with a lack of knowledge and information, is further elaborated in section 4.2.3. The principle of policy integration means that environmental considerations must be extended and integrated in the policies of every sector. This also includes that stakeholders should cooperate and "share knowledge […] to achieve the goal of sustainability" (UNEP, 1992: point 14). As already mentioned, such cooperation is currently lacking. However, due to the fact that many stakeholders agree to change this situation in the future, this conflict can be solved. For example, the *NEZ*, which also propagates environmental and sustainability considerations, would like to collaborate with the Lighthouse Foundation. The same idea is brought forward by the *Ostseefjord Schlei GmbH,* which rather focuses on tourism. Therefore, it becomes evident that this similarity eventually leads to compliance with the described principles.

The last and only partial similarity of this dimension states that several stakeholders want to reduce noisy activities, such as motorboats. This idea implies that annoying activities currently take place on the Lotseninsel. On the one hand, this similarity stands in contrast to the fact that many stakeholders do not make negative remarks about the Lotseninsel. On the other hand, since stakeholder only want to reduce activities that can have a negative impact (in this case noise) on others, this similarity is in compliance with the principle of intra-generational equity, which encompasses that the activity of one should not have a negative impact on the usage of others (European Union, 2002; Carter, 2007). However, few stakeholders also disagree in this regard and do not want to reduce any activity.

Differences

One point of difference comes up in regard to the exact form and level of tourism and give also rise to conflicts with several principles of sustainable development.

On the one hand are stakeholders who are against a promotion of tourism (be it the promotion of marketing, services, or new facilities). However, this position conflicts with two sustainable development principles: first, the satisfaction of needs, and second, the warranty of economical viability. The former principle underlines that people must have possibilities to satisfy their needs (Kay/ Alder, 2005). In case of the Lotseninsel, this principle is only partly applicable, because visitors can also satisfy their needs in the nearby villages. Nevertheless, since the Lotseninsel is only accessible by boat, and since it is a touristic place, visitors should have at least access to water, food, and sanitary facilities. The latter principle states that "sustainable economic opportunities and employment options as sources of durable financing for integrated coastal zone management initiatives" are needed (European Union, 2002: 25: chapter 1, point d). This means, that marketing, as well as touristic offers are necessary on the Lotseninsel to become economically viable.

On the other hand are stakeholders who want to promote tourism. Their position obviously is not conflicting with the above described principles. Instead, their demand for more marketing, more services, and new buildings, can quickly lead to overcrowding and overexploitation, and thus to a conflict with the principle to respect the carrying capacity. For example, in order to accommodate the demand for more and better sanitary and freshwater facilities, it would be necessary to upgrade

the existing facilities. However, since wastewater treatment is restricted and freshwater is not a renewable resource on the Lotseninsel, an upgrade would clearly surpass the carrying capacity. It is evident that this conflict also reinforces the conflicts of the normative dimension which deal with carrying capacity, and in addition, mitigates the compliance to prevent overcrowding.

The future form and level of nature conservation is the second point of difference in the vision of future development. Many stakeholders are against the promotion of nature conservation, because they are afraid that their freedom might be curtailed and that the Lotseninsel might be closed off to the public. However, this point of view leads to conflicts with the sustainable development principle to protect the environment. This principle states though, that "environmental protection shall constitute an integral part of the development process" (UNEP, 1993: point 6). Therefore, it is necessary to promote the preservation of nature. Furthermore, since nature conservation is necessary to prevent overcrowding, this conflict also weakens the compliance which arises due to the common opinion to prevent overcrowding.

The impact of the third point of difference – the form of aesthetics – is also connected with the principle to protect the environment, since the preservation of aesthetic elements and the conservation of nature are closely connected. The opinions about the aesthetic aspects divide into stakeholders who want to preserve the idyll and simple ambience of the Lotseninsel. The preservation of such attributes is likely benefiting the protection of nature. Therefore, the opinion to change such attributes and make the Lotseninsel more exclusive rather leads to a conflict.

The last point of difference of this dimension, which arises in regard to the future form and level of activities, gives rise to conflicts with two requirements of sustainable development. The reason for this is the fact that tensions exist between the groups of visitors. These tensions become evident due to the fact that visitors who travel with sailing boats as well as canoeists want to reduce the ferry service, while in turn some of the visitors who rely on the ferries want to reduce water sport activities. It appears that the opposite activity is conceived as bothering by the respective stakeholders. It becomes evident that this situation is conflicting with the principle of intra-generational equity and thus also mitigates the compliance with this principle, which arises from another similarity of the vision of future development. In addition, another requirement of sustainable development is to provide mechanisms, which reduces and resolve conflicts between stakeholders (Kay/ Alder, 2005). Therefore, a conflict arises with this principle if nothing is done about the described tensions.

4.2.3. Cognitive dimension

The partial similarity of the cognitive dimension is in compliance with sustainable development principles. In contrast, three of the four differences lead to conflicts, while one difference only affects other compliances.

Similarities

The preceding analysis of 'images of nature' elucidates that the belief of a fragile (and dynamic) ecosystem is common for the majority of the stakeholders of the Lotseninsel. This belief, although exceptions exist, underlines that stakeholders perceive the impact of strong interventions on nature and its processes as negative. Since nature is regarded as fragile, it is much more difficult to realize developments which heavily alter the natural surroundings, because stakeholders would perceive it as destructive. Therefore, this similarity reinforces the compliances and mitigates the differences of

the vision of future development which arise in regard to the principle to protect the environment. Furthermore, the similar belief also complies with another requirement, because according to the ecosystem approach - an approach which is often advised in order to achieve sustainable development (Kay/ Alder, 2005; European Union, 2002; Post/Lundin, 1996) – an ecosystem should always be regarded as being fragile and dynamic (Kay, Alder, 2005).

Differences

The first point of difference about the lack of knowledge and information about current projects on the Lotseninsel, lead to the problem that the purpose of measures is sometimes not understood. Due to this difference it can be concluded that conflicts arise with the requirement of sustainable development to establish "adequate systems for […] disseminating information to the public" (European Union, 2002: 26, chapter 4, point g).

Another conflict with sustainable development requirements unveils, since the idea of sustainability is incomprehensible to many stakeholders and since the interpretations differ strongly between the stakeholders. Such a lack of awareness hampers the communication and cooperation. Furthermore, it stands in conflict with the precondition that awareness about sustainable development and environmental protection should be promoted. This requirement is associated with the fact that information should be made widely available (Post/Lundin, 1996; UNEP, 1993).

The third difference of this dimension describes the contrasting definitions stakeholders have about nature. This point of difference can reinforce the conflicts and mitigate the compliances with the principle to protect the environment, which are described in the vision of future development. The reason here is that due to a different definition of nature, stakeholders can also have a different idea of environmental protection. If, for example, nature conservation is promoted, the stakeholders with a narrow definition would only want to promote the forms of nature, they regard as natural, while the stakeholders with a very broad definition are satisfied with any form of nature. This hampers the process in regard to environmental protection. It is evident that the effect of this difference also stands in contrast to the impact of the similar belief.

Lastly, many stakeholders are differently involved in the management process of the Lotseninsel and many think that they are not or insufficiently included. This situation is evidently conflicting with the principle of democracy and participation. This principle means that all parties from a broad range of sectors, as well as citizens, must be integrated in the management process. That way it is possible to work towards democratically agreed objectives in order to handle environmental issues. In other words, to properly handle environmental issues, participation of all concerned stakeholders is necessary (UNEP, 1993).

4.2.4.Expressive dimension

In regard to the expressive dimension, the partial similarity and the difference do not directly lead to compliances or conflicts with sustainable development principles, but instead are reinforcing other compliances and conflicts.

Similarity

The partial similarity in regard to the aesthetical experience of stakeholders and the associated preference for wild nature does not directly comply with the principle of nature protection. However,

it creates a beneficial starting situation to establish nature protection – or rather to preserve wild nature. Therefore, it reinforces other compliances with this principle. Furthermore, it mitigates the conflicts which arise due to different opinions in regard to the future form and level of nature conservation and the future preservation of aesthetic aspects, because the stakeholders agree on the form of nature they would like to have on the Lotseninsel. However, this similarity is also in conflict with the difference in regard to the definitions of nature, because stakeholders prefer the forms of nature which have a wild appearance, although they regard different forms of nature as natural. Furthermore, few stakeholders disagree and rather prefer organized or both forms of nature.

Difference

The difference in regard to the aspects of personal importance also does not conflict or comply with any principle of sustainable development. Instead, it reinforces and complicates the already existing conflicts of the vision of future development. All these different aspects of personal importance must be taken into account in the development process, since it is likely that the stakeholders want to preserve the different, partly contrasting, personal important aspects in the future. This can be in conflict with other opinions about the form and level of tourism, nature conservation, aesthetics, and activities in the future. Therefore, the process to come to consensus becomes more difficult.

4.2.5. Conclusion

It becomes apparent that all the similarities of the 'images of nature' stand in compliance or at least reinforce other compliances with sustainable development principles. In addition, all the differences give rise to conflicts or reinforce other conflicts with requirements of sustainable development.

In regard to the normative dimension, the commonly most valued aspect seems to be an important requirement for a successful sustainable development. However, this compliance is mitigated by the fact that stakeholders also differently value other, supplemental aspects.

The difference of this dimension in regard negative remarks is only conflicting with sustainability due to the statements which focus on overcrowding and pollution. These leads to the assumption that a conflict exists with the principle to respect the carrying capacity. In addition, the preferred forms of management – another point of difference - stand in conflict with several principles. The proposed management idea to avoid regulations is against the principle to respect the carrying capacity and the precautionary principle. Furthermore, the proposed management that only focuses on a certain aspect (e.g. aesthetics, accessibility) is against the principle of balancing economical, environmental, and social considerations.

The similarities of the vision of future development also comply with sustainable development principles. However, it is important to state that these similarities concern the future and imply that the current situation might not be sustainable. The similar opinion that nature and tourism are not opposing forces is in compliance with the requirement of sustainable development to integrate and balance conservation and development. Furthermore, the common aim to prevent overcrowding, also meets the requirements that the carrying capacity of an area most not be exceeded. Another similarity is the stakeholders' wish to improve communication and cooperation in the future. This complies with the principle of participation and policy integration. The last and only partial similarity of this dimension might lead to compliance with the principle of intra-generation equity, because stakeholders agree to reduce noisy activities (e.g. motorboats), which apparently have a negative impact on other stakeholders.

The differences of the vision of future development are concerned with the future form and level of tourism, nature conservation, and activities. The visions which are against the promotion of tourism are conflicting with the principle to satisfy the needs of tourists and the requirement to create economic opportunities. Other visions, which propose the expansion of tourism, can conflict with the principle to respect the carrying capacity. Another conflict arises due to differences in the vision in regard to the level and form of conservation. Especially the opinions against more nature conservation are conflicting with the requirement to protect the environment. The difference in regard to aesthetic aspects is closely connected with this conflict. Furthermore, the fact that tensions exist between the groups of visitors – because the opposite activity is conceived as bothering –is conflicting with the principle of intra-generational equity. In addition, if nothing is done against these tensions, a conflict arises with the requirement to reduce and resolve conflicts between stakeholders.

In regard to the cognitive dimension, compliance exists between the stakeholders' belief and the requirement of an ecosystem approach that ecosystems must be regarded as fragile dynamic. Furthermore, it reinforces other compliances with the requirement to protect the environment. In contrast, differences concerning the stakeholders' level of information and knowledge about current development measures and the concept of sustainability, lead to conflicts with the requirement to make information available to the public and the principle to promote awareness about sustainable development. The difference in regard to the definition of nature only reinforces other conflicts which arise with the principle to protect the environment. Lastly, the fact that stakeholders are not or differently involved in the management process gives rise to a conflict with the principle of democracy and participation.

In the expressive dimension, neither compliances nor conflicts are found. Instead, the similarity and difference seem to only reinforce other compliances respectively conflicts. The similar aesthetical experience of wild nature reinforces compliances with the principle to protect the environment. In contrast, the difference in regard to the personally important aspects reinforces the conflicts of the vision of future development and hampers the development process.

The results of this sub question are elaborated in the next section in regard to their benefit or disadvantage. Furthermore, solutions are developed to solve conflicts.

4.3.Alignment of images and requirements

The analysis until now reveals compliances, but also conflicts between the similarities and differences of the 'images of nature' and the principles of sustainable development. In the following section, these compliances and conflicts are described in more detail in respect to their benefit respectively disadvantage. Furthermore, approaches to solutions for conflicts are included. This will give an answer to the third sub question:

What solutions can be developed to align the points of view of the stakeholders with the principles of sustainable development in order to come to an integrated, balanced and well-accepted concept of usage?

The preceding analysis figured out that the similarities of the 'images of nature' are all conform to sustainable development principles, while all differences give rise to conflicts. Therefore, in the following section, similarities and differences are equal to compliances respectively conflicts and are again divided according to the associated dimensions of 'images of nature'.

4.3.1.Normative dimension

Similarities

The compliance of this dimension arises, due to the partial similarity that many stakeholders regard remoteness as most valuable aspect.

This situation immensely facilitates the process to come to a concept of usage. It forms a value base on which the stakeholders come together and agree. Therefore, this common base is critical in the development and further interactions should be based on it (Kay, *et.al*, 2005). This compliance also forms a good starting point to improve communication and participation. In case of problems and disagreements, the process can always come back to this value base and remind the stakeholders of this common feature. That way, the associated conflict which arises due to a different valuing of supplemental aspects, can also be mitigated, since these aspect build upon the main aspect 'remoteness'. Nevertheless, these supplemental aspects need to be communicated as well in order to enhance understanding between the stakeholders. Furthermore, it is important to take into account and communicate the opinion of few stakeholders who do not value remoteness, but instead choose other aspects. That way it can be prevented that these stakeholders "dig in" into their own interest and hamper the process (Elands, et. al, 2009: 27).

Differences

The first difference of this dimension in regard to negative aspects of the Lotseninsel reveals that several stakeholders mention negative aspects which focus on pollution and overcrowding. This leads to a conflict with the principle to respect the carrying capacity. If nothing is done against this (currently weak) problem, degradation of the ecosystem and the ambience will occur. However, several stakeholders are already concerned about this aspect, which becomes evident in the vision of future development.

In order to solve the problem of pollution and thus weaken the negative impact of overcrowding, the principle of "the polluter pays" is recommended in literature, which basically means, that the

polluter should bear the costs of pollution (UNEP, 1992: point 12). In the case of the Lotseninsel, this solution is not applicable, because it is difficult to monitor who is polluting. Instead, one stakeholder of the Lotseninsel introduces a comparable idea, which is “take back your trash” (Ölscher, 2012). It means that everything visitors bring to the Lotseninsel has to be taken back to the mainland. Although such a principle is already in place, the problem of pollution still seems to exist. The reason might be a lack of adherence to this rule. Furthermore, information about this principle is scarce on the Lotseninsel. Apart from a little sign on the notice board (which is behind the house of the harbor master), nothing else gives information on this rule. Therefore, in order to solve this situation, visitors must be made aware. In order to achieve this, the concept of “take back your trash” must become more evident on the Lotseninsel. Furthermore, voluntary agreements should be enhanced by improving communication and participation. This way, stakeholders have a say in this regard and thus much more freedom (Carter, 2007). In turn, this also leads to a better adherence.

In regard to the different preferred forms of management, which lead to conflicts with several principles, some stakeholders are in favor to regulate the number of visitors, while others represent the opinion that a regulation of visitors is done automatically by the carrying capacity of the Lotseninsel. Latter can lead to an overshoot of the carrying capacity and thus to a degradation of the quality of the Lotseninsel (Wall/ Mathieson, 2006). Furthermore, this statement violates the precautionary principle. In contrast, the implementation of regulations could lead to a perceived loss of freedom, depending on the form of implementation and the understanding of the stakeholders. Nevertheless, rather than exceeding the carrying capacity, the number of visitors should be regulated in order to become sustainable. Furthermore, this conflict becomes even more difficult to solve, due to the many specific aspects on which the stakeholders focus.

In order to solve this conflict, it is necessary to successfully implement regulations and to integrate and balance the different specific aspects of management. For a successful implementation of regulations, compliance and support of stakeholders is essential. Otherwise the regulation would be ineffective, since it would not be adhered or only at great expenses (Carter, 2007). Therefore, compliance and support should be enhanced beforehand. This can be done by including stakeholder in the process and by taking into account their objections. That way, the specific aspects they focus on are also taken into account and it becomes possible to integrate and balance them. Furthermore, the proposed middle course of management can be used as starting point, because it takes into account the importance of both, the positive impact of regulations and the freedom of stakeholders. Additionally, it can be beneficial to connect this process with the common aim to prevent overcrowding, as described in the vision of future development, because regulations can help to achieve this aim. If regulations are thus reasoned with this aim, they might be better supported by the stakeholders.

4.3.2. Vision of future development

Similarities

In regard to the vision of future development, the first similarity is the thinking that tourism and nature conservation need to be combined in order to create possibilities for people to experience nature. The associated compliance with the principle to integrate conservation and development immensely facilitates the process and simplifies the balancing and integration of opposing interests. Furthermore, the creation of possibilities to experience nature creates the opportunity to encourage ecological behavior of visitors and thus the support for certain policies (Elands, *et. al,* 2009). The

connection of tourism and nature conservation is thus essential in order to create a concept of usage and to achieve sustainable development. In contrast, in other cases, conservation and development are the most opposing forces and it is very difficult to connect these two (Kay/ Alder, 2005).

The second similarity occurs because stakeholders have the opinion that overcrowding and overexploitation must be prevented. This opinion is not only in compliances with the principle to respect the carrying capacity, but can also be regarded as common objective or aim, since many stakeholders agree on one aspect they certainly do not want on the Lotseninsel. Therefore, measures within the concept of usage that prevent overcrowding are more likely to be accepted. This similarity can thus also be regarded as base on which communication can be set up to further develop the Lotseninsel in a sustainable way and to reduce conflicts which arise in regard to the carrying capacity.

The third similarity is the fact that stakeholders are interested in a better communication and cooperation. This presents the opportunity to improve the current situation and to take a step to the accomplishment of the principle of policy integration and participation. Possibilities to collaborate with stakeholders could be for example joint (conservation) projects or the creation of connected touristic offers, such as joint exhibitions or trips from the NEZ, through the nature reserve, to the Lotseninsel.

However, although these three compliances are based on complete similarities, it is necessary to underline that only few stakeholders make a statement here. Therefore, it is necessary to communicate with all stakeholders about the topics in order to include their opinion and ideas as well.

The last and only partial similarity of this dimension is about the opinion to reduce motorboats and other comparable noisy activities and is thus in compliance with the principle of intra-generational equity. However, only few stakeholders make a statement in this regard and in addition some of them even disagree to reduce motorboats. Therefore, it is necessary to communicate this topic, but with all stakeholders, in order to include their opinion whether motorboats are disturbing and negatively impact their situation or not.

Differences

The first difference arises in regard to the future form and level of tourism and is associated with several differences. On the one hand are stakeholders who want to improve tourism. However, this can lead to a conflict with the principle to respect the carrying capacity. On the other hand are stakeholders who are against an expansion of the touristic services. This position though is against the requirements to satisfy the needs and to create sources of durable financing. In order to solve this disagreement, communication, but also information, needs to be enhanced in order to bring stakeholders together.

The *Lighthouse Foundation* already wants to combine the opposing positions in order to reduce all of these conflicts. In a statement they underline that touristic offers should be promoted, but nevertheless profit is not given top priority (Ambsdorf, 2012). Economical aspects are thus ranked below nature and humans. However, due to misunderstandings, the opposition against promotion of development still prevails. An example is the fact that *Verein Jordsand* is against the renting of the Lotsenhaus for individual tourists, because they fear that this attracts too many visitors. This position is arbitrary though, because the *Lighthouse Foundation* only wants to let the Lotsenhaus to groups

and organizations. This example makes evident that misunderstandings exist in regard to the role of tourism and that communication must thus be enhanced, because otherwise costs and time will increase, while support diminishes. A case of the '*California Marine Life Protection Act Initiative'* reveals that a close dialogue and discussions with stakeholders can facilitate to clear up misunderstandings (NCRSG, 2010).

Furthermore, stakeholders who want to promote tourism do not think of the consequences. An example is the fact that some stakeholders demand an upgrade of freshwater and sanitary facilities, which are especially overburdened on busy summer days. However, an upgrade would be very expensive (in economical and ecological terms), because if more sanitary facilities are built, the small waste water treatment plant must be enlarged as well. Furthermore, freshwater is not a renewable resource on the Lotseninsel, but is brought from the mainland and thus also associated with ecological and economical costs. This makes evident that upgrades would be against the principles of sustainable development. However, information about these restrictions of resources is barely available on the Lotseninsel, because apart from a sign on the notice board, nothing gives further explanations. Many users are thus not aware of this problematic. Therefore, instead of an upgrade, users need to be informed and made aware that the facilities and resources should be used in moderation.

A second conflict arises due to the different opinion about the form and level of nature conservation. Some stakeholders are against a promotion of nature conservation, because it is feared that thereby their freedom might be curtailed. This fear might originate from bad experience with nature conservancy. Nevertheless, nature conservation is an important and necessary subject on the Lotseninsel which must be integrated in the concept of usage. Therefore, in order to solve this conflict, it is necessary to explain to the stakeholders that their fear is arbitrary, since a premise of sustainable development is an "adequate accessible land for the public, both for recreational purposes and aesthetic reasons" as long as sensitive areas are protected (European Union, 2002: 25, chapter 1 point f). Nevertheless, the conflict is not solved by only explaining this statement. It is also necessary to build up trust. The best way to do this is by incorporating the stakeholders in the development process and to commonly decide on the desired conditions of the Lotseninsel. Subsequently, a common image of the future can be envisioned and changes are more likely to be accepted. The example of the '*Drents-Friese Wold'* in the Netherlands underlines the importance that ideas of stakeholders must be included in the processes and realized. Otherwise, the stakeholders lose their trust in the policy group and subsequently protest against decisions (Elands, *et.al*, 2009:15ff).

Additionally, the third difference, which arises in regard to aesthetic aspects, also conflicts with the principle to protect the environment. It is thus closely connected with the conflict which arises in regard to the conservation of nature. Therefore, the enhancement of participation is also applicable to solve this minor conflict. However, since only few stakeholders are involved in this regard, it is necessary to communicate with all stakeholders about this topic beforehand in order to integrate their opinion.

The fourth difference of this dimension, which is based on tensions between the different groups of visitors, gives rise to a conflict with the principle of intra-generational equity. This tension can also be regarded as a problem between new and old visitors, because sailors already come to the Lotseninsel for many years, while the ferries started to land here in 2008 (Schacht, 2012). In the concept of

usage, it must be prevented that the fronts harden and the opposing groups "dig in" into their own interest, as it is the case in the '*Drentsche Aa*'. If this happens mediation between these stakeholders will become very difficult (Elands, *et.al,* 2009: 27). Therefore, mechanism must be provided to reduce or resolve conflicts (according to the sustainability requirement to resolve conflicts). In order to bring these stakeholders together, informal mechanisms, such as regular discussion workshops should be introduced. The case of a UNESCO discussion workshop shows that conflicts could be solved in small islands of Dominica. With help of discussion meetings, stakeholders reached consensus and established a voluntary agreement which mutually recognized the rights of the other groups (UNESCO, 2002).

4.3.3. Cognitive dimension

Similarities

Regarding the cognitive dimension, the partial similar belief that nature is fragile (and dynamic) is in compliance with the requirement that nature should be regarded as fragile and dynamic (Kay/Alder, 2005). This prevalent belief enables a proper and sustainable use of nature. Furthermore, due to this belief it can be assumed that stakeholders are more aware of the impact of their own actions and thus more ecological responsible (Kay, *et. al*, 2005). Nevertheless, it is important to take into account that not all stakeholders have this belief. Instead, they regard nature as resilient and are likely justifying much more activities and interventions that harm nature. However, since the belief of a fragile and dynamic nature prevails, such activities and interventions are regarded as disturbing by the majority and measures against such interventions are more likely to be accepted. Nevertheless, it is also very important to communicate with stakeholders who have a different belief, even if their number is very small. Otherwise, it is possible that they feel excluded and in addition, misunderstandings can arise.

Differences

Two differences of this dimension – the opinions about current developments and the interpretations of sustainability – are based upon a lack of knowledge and information. This gives rise to conflicts with the principles of information dissemination and promotion of awareness of sustainability respectively. Since the purpose of projects and the idea behind the concept of sustainability are not clear to many stakeholders, the direction of development becomes vague and misunderstandings can arise. If this situation is not changed, resentment and protest will grow and stakeholders will lose trust in the *Lighthouse Foundation*. This in turn can lead to less commitment and acceptance. In addition, some stakeholders will become passive or will "dig in" into their interest. This will make it more difficult to motivate and communicate with those stakeholders (Elands, *et.al*, 2009).

In order to solve this, more transparency and information is required. It is also necessary to open up and maintain dialogues to avoid confusion and misunderstanding. Projects as well as 'plastic words' such as sustainable development must be clearly explained and commonly defined. It must become clear to stakeholders what the aims behind the developments are, but also which procedures are used to reach this aim. Especially latter is often forgotten, like in the case of '*Project Heiderijk*', in the Netherlands (Ruesen, 2009). In this case, many stakeholders were upset about the interventions which were carried out. They were only told about the aim, but not which means were used. However, a good possibility to explain the aim and the procedures to stakeholders is by using visual

media. That way, stakeholders (even non-experts) will gain a deeper understanding (Smith, *et.al,* 2012). Additionally, stakeholders must understand the philosophy behind developments. In other words, they must become aware of sustainability. A good way to do this, are training and education programs about this concept. The UNESCO already implemented comparable programs about sustainable development in several countries around the world, which motivated stakeholders to become responsible as well as to become willing to collaborate (UNESCO, 2012). All of them focused on sustainability issues (such as nature conservation, consumption, climate change, etc.),

Furthermore, it is obvious that commitment, understanding, and acceptance for projects and sustainability would be even higher, if stakeholders are integrated in the decision-making and implementation process. Lastly, evaluations, which also include stakeholders and are available to the public, are also critical in this regard, because they can be used to identify possible modifications of project plans as well as trends among the stakeholders (European Union, 2002; Kay/ Alder, 2005).

The various definitions about nature lead to the third difference of this dimension. Due to the fact that the stakeholders regard different forms of nature as natural, the development process becomes more difficult, since conflicts about the right form of nature and nature conservation are reinforced. In order to solve this problem it is necessary to understand the definitions of other stakeholders. Therefore, it is necessary to communicate. In addition, participation can be used to come to an agreement about a common definition, which is understood and supported by all stakeholders.

The last difference of this dimension is the fact that many stakeholders feel not or insufficiently involved. Since they have a low perception about the degree of participation, it is evident that a conflict with the principle of democracy and participation exists. However, this stands in contrast with the statement of the *Lighthouse Foundation* that every stakeholder is invited in the development process, but that most of them do not use this opportunity (Ambsdorf, 2012). In respect to *Arnstein's ladder of participation, t*his statement displays that in the eyes of the *Lighthouse Foundation*, stakeholders are at least on the 'placation' level of participation, while stakeholders see themselves on a much lower position (see Figure 19).

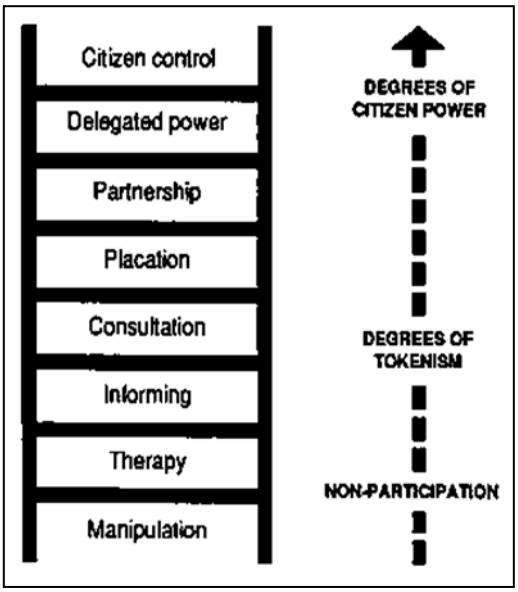

Figure 19: Arnstein's ladder of participation (Kay/ Alder, 2005: 110)

These different opinions about the degree of participation indicate a lacking communication between the stakeholders, which also underlines that most stakeholders have a low degree of participation. If this situation is not changed and stakeholders do not get opportunities to participate, protest can arise. Especially stakeholders, who feel connected with the Lotseninsel and do not agree with the objectives of the decision-makers, will start to protest, like in the case of the '*Drents-Friese Wold*' (Elands, *et.al,* 2009).

In order to solve this issue and enhance stakeholder participation, periodic meetings among the stakeholders should firstly be established. However, it is necessary to ensure that stakeholders use

such possibilities. Therefore, the reasons to not use such opportunities must be eliminated. These reasons are inaccessibility, unawareness, disinterest, but also disappointment.

The first aspect can be solved by ensuring that meetings are as geographically and temporally accessible as possible. Rotating the location of the meetings can help in this regard (Smith, *et.al,* 2012). To tackle the second reason, meetings and similar opportunities must be promoted better and every stakeholder has to be invited. The third factor can be solved by illustrating the importance of the meetings to the stakeholders as well as enhancing their sense of stewardship and responsibility by involving them in projects with a bottom-up approach (Kay/ Alder, 2005; Elands, *et.al,* 2009). Disappointment can be prevented by fostering trust (as described in the vision of future development) and by realizing the ideas of the stakeholders. In the case of the '*Drentsche Aa'*, the only stream in the Netherlands with a natural, meandering form, participants did not want to get involved in the process any longer, because they were disappointment and had the feeling that their ideas are not heard and implemented anyway (Elands, *et.al,* 2009).

After communication is established, the next step towards participation is the synchronization of work and the establishment of common goals and objectives. Finally, stakeholders need to lose at least part of their independence as they must respond to explicit goals and objectives (Kay/ Alder, 2005). The participation should at least reach the 'partnership' level, where stakeholders participate actively in the development process with the Lighthouse Foundation (cf. Figure 19).

4.3.4.Expressive dimension

Similarities

Although no compliance occurs in regard to the similarity of the aesthetical experience of wild nature, it is nevertheless important to take the effect on other compliances and conflicts into account. Especially in regard to conflicts and compliances with the principle to protect the environment, this similarity can be beneficial. If the communication process got stuck, it is beneficial to remind the stakeholders of this similarity. That way, it can also be combined with the similarity of the most valued aspect of the normative dimension. However, since this is a partial similarity, it is very important to communicate with stakeholders who prefer a different form of nature. Otherwise, they are likely to feel excluded and form an opposition.

Differences

The difference of this dimension about the personally important aspects is also neither in compliance nor in conflict with any principle of sustainable development. Nevertheless, this difference has an impact on other conflicts. Especially in regard to the vision of future development it becomes important, because the different personally important aspects affect the opinions about development measures and reinforces other differences in this regard. Therefore, in order to make the solutions to the conflicts of the vision of future development more effective, it is also necessary to communicate these personally important aspects. That way a better sympathy among the stakeholders is promoted.

4.3.5.Conclusion

The results of this analysis point out that the unveiled compliances can be used as starting points to enhance the process of sustainable development or as assistance to solve several conflicts. However,

it is necessary to underline that several compliances are based on partial similarities and others do not include all stakeholders. Therefore, if they are used as assistance to solve problems, it is necessary to take into account the smallest exceptions respectively to involve all stakeholders. In turn, the detected conflicts must be solved in order to reach sustainable development. All the described solutions especially focus on three aspects in which all the conflicts seem to be rooted. These three aspects are information, communication, and participation.

The first compliance of the normative dimension underlines that the similarity in regard to the most valued aspect is very important in order to improve communication. However, it is necessary to take into account that several stakeholders have different value judgments. In contrast, the first conflict, which arises due to negative remarks about pollution, can be solved by raising awareness about the principle “take back your trash. The second conflict about regulations in regard to the form of management can be solved by enhancing communication as well as participation. That way understanding and support for regulations is enhanced.

In regard to the similarities of the vision of future development, the opinion to combine nature and tourism simplifies the balancing of the respective aspects, while the aim to prevent overcrowding can be regarded as common objective. Furthermore, the fact that stakeholders want to improve communication and cooperation simplifies the implementation of measures which improve the current situation of these aspects. However, it is important to communicate with all stakeholders beforehand, because only few stakeholders make a statement about the different aspects of this dimension. This is especially necessary in regard to the compliance due to opinion to reduce motorboats, because here few stakeholders clearly disagree. In contrast, the conflict of this dimension, which arises due to disagreements in regard to the form and level of tourism, is mainly based on misunderstandings respectively a lack of communication and information. In order to solve this conflict, information and communication must be enhanced. Former aspect can be improved by making stakeholders aware that resources should be used in moderation. Latter aspect can be improved by establishing a close dialogue as well as regular discussions and workshops with stakeholders. The conflict due to tensions between visitors can also be solved this way. Furthermore, the conflict in regard to the form and level of conservation might be based on a lack of trust. Therefore, in order to generate trust, stakeholders must be included in the process. The conflict in regard to aesthetic aspects can also be solved with help of communication and participation.

The compliance of the cognitive dimension in regard to their belief that nature is fragile and dynamic, benefits the process, because it underlines that the stakeholders are ecological responsible and aware. In contrast, the conflicts of this dimension stand in connection with each other and are the source of many other conflicts. Two conflicts arise due to a lack of information and knowledge about the idea behind current development measures respectively the concept of sustainability. Therefore, the direction of the development process becomes vague. In order to solve this, more transparency and availability of information is needed. An open dialogue to inform the stakeholders about the philosophy, the aim, and the process of the development is necessary. Training and education programs are also helpful in this regard. Another conflict arises due to different definitions about nature, which need to be communicated in order to understand each other. The last conflict of this dimension comes up in regard to the principle of participation and democracy. In order to change this, periodic meetings, the establishment of joint project and common goals, and the enhancement of a sense of stewardship are necessary.

In regard to the expressive dimension, the similarity of aesthetical experience is especially beneficial to enhance communication between stakeholders, since it is something they have in common. In turn, the difference about personally important aspects can hamper the development process, since stakeholders also want to preserve their distinct personal important aspect in the future. Therefore, it is necessary to communicate these aspects to facilitate a better understanding between stakeholders.

These results of this sub question form the foundation for the elaboration of an advice to enhance the process to come to a concept of usage.

5. Advice

Based on the results derived from the sub question an advice is elaborated in order to answer the main research question:

What advice can be given to enhance the process to come to an integrated, balanced and well-accepted concept of usage, based on 'images of nature' of the stakeholders of the Lotseninsel, in order to manage the Lotseninsel in a sustainable way?

The previous conclusions already reveal that especially three cornerstones should be enhanced in order to facilitate the process to come to an integrated, balanced, and well-accepted concept of usage. These three aspects are information, communication, and participation. Altogether, they can solve the described conflicts between 'images of nature' and principles of sustainable development in a way that meets the criteria of the concept of usage, which are imposed by the *Lighthouse Foundation*. These criteria are the balancing and conservation of natural, social, and economical aspects as well as the enhancement of acceptance and support of the stakeholders in regard to the development of the Lotseninsel.

The three cornerstones should be regarded as base to enhance the process by solving the conflicts between 'images of nature' and principles of sustainable development. In addition, the unveiled compliances can be very helpful to facilitate their improvement by assisting the conflict resolutions. However, it is necessary to process these compliances first, because some of them are based on partial similarities and thus encompass exceptions, while others do not include all stakeholders. Therefore, before the compliances are used as assistance to solve conflicts, it is advised to integrate all stakeholders and each point of view (disregarding the number of stakeholders who form exceptions to the similarities). Otherwise, the use of compliances can lead to even more conflicts.

It is difficult to separate the cornerstones and deal with every part separately, since they reinforce each other. However, it is possible (and necessary) to make a distinction in regard to the target group of the cornerstones, because it must be distinguished between organized and unorganized stakeholders.

On the one hand are unorganized stakeholders, like visitors, who are difficult to get involved in the development process due to their low frequency of visits, the short duration of stays, but also and especially since they are mainly not willing to get involved. This means that they can only be approached in a one-way manner. Therefore, only the enhancement of the cornerstone information is useful, while communication and participation are not applicable (cf. Figure 20). Nevertheless, it is necessary that their interests must be represented by other stakeholders in the communication and participation process (e.g. day visitors by shipping companies; visitors who come with private boats by *Wasserwanderplatz Schleimünde e.V.*; canoeists by *Kanuverband Schleswig-Holstein).*

On the other hand are organized stakeholders who must be included in a two-way manner in regard to all three cornerstones. In regard to the cornerstone of information, organized stakeholders are not only informed, as it is the case for unorganized stakeholders, but in addition information is commonly compiled and selected with help of communication and participation. However, in order to be able to enhance participation and thus to come to agreements between stakeholders,

communication and mutual understanding between stakeholders must be enhanced beforehand. This all makes evident that the cornerstones are connected and that the improvements of one, benefits the improvements of the other cornerstones (cf. Figure 20).

In addition, this underlines that many conflicts with principles of sustainable development can best be solved if all three aspects are improved and combined. Therefore, it is difficult to explicitly assign the conflicts to the distinct cornerstones. Nevertheless, the conflicts were associated with the cornerstones for overview purposes.

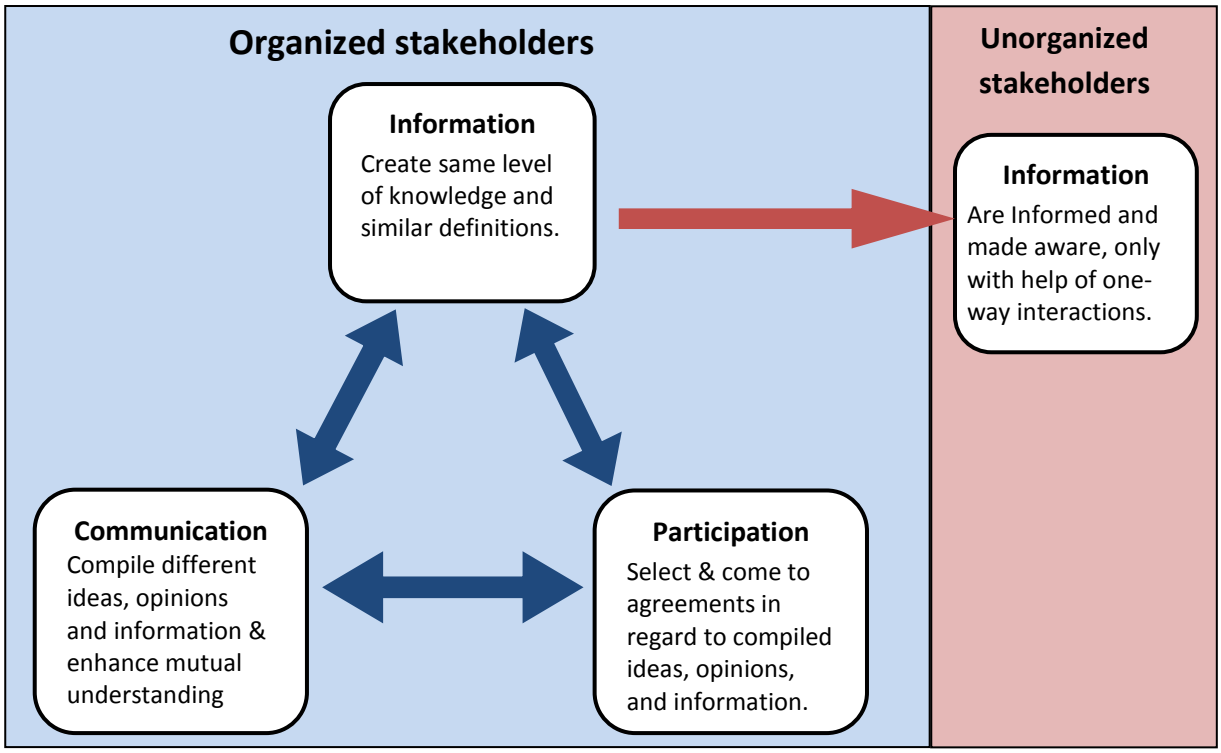

Figure 20: The three cornerstones and their effect and mutual influence, divided by target group

The conflicts, which arise due to a lack of information and awareness, are assigned to the cornerstone *information*. These conflicts are especially the noncompliance of the pollution principle, the unawareness of the restriction of resources, the different opinions about current development measures, and the different ideas about the concept of sustainability. The improvement of *communication* is especially linked with the conflicts which are based upon tensions between stakeholders and disagreements and misunderstandings about the form and level of tourism. The enhancement of participation is connected with the conflicts which arise in regard to the principle of democracy and participation. Furthermore, the conflicts which come up due to the different opinions about the form of management as well as the conflict about the form and level of nature conservation which is based on a lack of trust can also be solved this way.

The following section elaborates each cornerstone separately. This is done by firstly describing the significance and the conflicts which are associated with the cornerstone. Secondly, the stakeholders which must be included are stated, before thirdly the solutions and ways of enhancement are elaborated. The advised measures to solve the conflicts are described in a way to also use them in other, comparable situations. Fourthly, the aim and results of these solutions are explained, before fifthly, the use of compliances is elaborated. Lastly, the connections with the other cornerstone are stated.

5.1.Information

A. Significance

One cornerstone that must be enhanced is information. Its urgency becomes evident since several conflicts with principles of sustainable development arise due to a lack of information and awareness.

This becomes obvious since the philosophy behind sustainability and the aim of current development projects are not clear to many stakeholders. This evidently conflicts with the principles to promote awareness about sustainability and to disseminate information to stakeholders.

Furthermore, several aspects which stand in conflict with the principle to respect the carrying capacity, like the lack of information about the pollution principle “take back your trash” and the unawareness about the restrictions and moderate use of resources, also underline the importance of better information. The former aspect contributes to the problem of pollution and overcrowding, which is regarded as negative aspect by some stakeholders, while the latter aspect arises in respect to the stakeholders’ position to promote tourism without thinking about the carrying capacity.

B. Target group

In respect to the enhancement of *information*, it is necessary to divide the stakeholders into two target groups. As already mentioned, these groups are organized and unorganized stakeholders.

However, disregarding the group, information should be available for every stakeholder. This is especially necessary in regard to the idea of sustainability, which should be made comprehensible for every stakeholder, since it forms the foundation of development. Information about current projects and measures should be available for everybody as well.

In contrast, information about pollution principles as well as the restriction of resources and the associated promotion of moderate use should especially be directed to visitors (unorganized stakeholders), since they are very often on the Lotseninsel and directly affect the described aspects with their behavior. Furthermore, organized stakeholders who represent the visitors or at least stand in contact with them need to be informed as well, since they can forward the information to the visitors. These stakeholders are the shipping companies, the harbor master, *Naturnaher Wasserwanderplatz Schleimünde e.V, Kanuverband Schleswig-Holstein e.V., Event Nature e.V*, and also the *city of Kappeln, the municipality Maasholm, Ostseefjord Schlei GmbH, Naturpark Schlei*, and the *NEZ.*

C. Solution

Before any information is disseminated, it is important to compile the right information. This needs to be done in association with all organized stakeholders in order to ensure that information, ideas, and definitions are well understood and commonly accepted. It is evident that this first part of enhancement of the cornerstone information is connected with communication and participation. Therefore, the steps to compile information are elaborated in section 5.2., and the selection of information in section 5.3.

In the next step, the commonly compiled and accepted information should be disseminated to unorganized stakeholders. This can be done by making the information available on the Lotseninsel

itself. Therefore, signs which contain the commonly accepted information should be introduced on different places on the Lotseninsel. It is important here, that the signs are clearly visible and easy to understand. Signs about the pollution principle “take back your trash” should be set up in the harbor, on the pier, and near the sleeping place for canoeists (the *Paddelwiese*), while signs about the restrictions and moderate use of resources should be used near the sanitary facilities. Explanations about projects and measures should be made available at the respective construction sites. The information about sustainability and the associated meaning for the Lotseninsel should be situated at a central place, like the Lotsenhaus. All the signs should contain illustrations for an instant comprehension as well as detailed information about the whys and wherefores.

This all can be done by the *Lighthouse Foundation.* However, it is even more beneficial if visitors get all this information before they come to the Lotseninsel. Therefore, it is advised to provide information about the Lotseninsel already on the ferries, in the cities where the ferries start, at tourist information centers and similar places. In order to realize this, the help of the organized stakeholders who stand in contact with visitors is required. It is evident that for that a better communication with the regarding stakeholders is required.

Another possibility to increase information and knowledge of unorganized stakeholders about sustainability is by inviting them to education programs and associated lectures with as topic sustainable development. Of course, organized stakeholders can also participate in such programs. The programs should take place on a regular base (e.g. one time per month during the main season). The place where it takes place should always change in order to enhance accessibility. Possible places could be on the Lotseninsel, in Kappeln, or in Kiel. In addition, the topic should alternate between nature conservation, pollution, resources and consumption, power of stakeholders, and so on. That way the program remains attractive. However, the content should be based on the beforehand commonly compiled information in order to enhance acceptance of the organized stakeholders. Furthermore, it is advised to offer education programs for adults as well as for children. Both should be combined with excursions in the surrounding nature. In addition, programs for children should be designed in a playful manner. This means that topics of sustainability are linked with games, such as treasure hunts and quizzes.

Another important aspect which must be considered in order to solve the problem of the cornerstone information is the availability and accessibility of information for all (organized and unorganized) stakeholders. In this regard, it is not sufficient to disseminate information only on the Lotseninsel. Instead, the best way to widely distribute information is via internet. This is in particular important in terms of information about sustainability as well as explanations of current projects and development measures. Therefore, in regard to information about sustainability, it is advised to add the commonly accepted definition to the homepage of the Lotseninsel and the *Lighthouse Foundation*. Additionally, brochures about the Lotseninsel should also contain a short and concise description of the idea of sustainability. In order to ensure that the commonly accepted idea of sustainability is always present in the minds of the stakeholders, it is also advised to state it every time in the beginning of meetings and discussions.

In regard to current projects and development measures, it is advised to link the information on signs with information on the internet. For example, if stakeholders or visitors are interested to know more about the projects, the signs can refer to the homepage where more information can be found. However, it is important here that both, the signs and the information on the homepage, not only

explain the idea behind the projects, but also the aims and the procedures which are used. A good possibility to clearly explain the aim and the procedures to stakeholders is by not only using text but also using pictures which illustrate the planned changes.

D. Aim

The aim of these advices is on the one hand that all the stakeholders have the same level of knowledge and a similar definition and idea of the concept of sustainability. Especially latter is crucial since the philosophy behind sustainability forms the base of development. On the other hand the advised solutions want to reduce confusion and misunderstandings in regard to the development of the Lotseninsel. Lastly, it is intended to enhance awareness and knowledge about the importance of principles which promote pollution prevention, a moderate use of resources, or comparable aspects.

E. Use of compliances

The similar belief stakeholders have about nature can be beneficial in regard to the described solutions. The belief that nature is fragile (and dynamic) underlines that stakeholders are partially aware of the impact of their own actions. This already existing ecological responsibility can thus be combined with the measures which aim to improve awareness. For example, the information on the signs (e.g. about the principle to prevent pollution) could be combined with information which underline that nature is fragile and that pollution and overcrowding can have a strong negative impact.

However, if this compliance is used as assistance, it should be processed beforehand, because not all stakeholders share the belief that nature is fragile (and dynamic). These few exceptions must be taken into account by integrating these stakeholders in the communication and participation process. That way it is possible to prevent misunderstandings and to align the few differences.

F. Connection with other cornerstones

The availability of information not only solves the described conflicts, but also creates common definitions and a similar base of knowledge on which stakeholders can better communicate and participate. Therefore, the enhancement of information is also necessary for the improvement of communication.

Furthermore, an improvement of information can already help to solve misunderstandings which are associated with the cornerstones communication and participation. An example is the fear to lose freedom due to the promotion of nature conservation. This fear is arbitrary though because a premise of sustainable development is an “adequate accessible land for the public, both for recreational purposes and aesthetic reasons” as long as sensitive areas are protected (European Union, 2002: 25, chapter 1 point f)

In return, it becomes evident that communication and participation is essential in order to involve stakeholders in the process to compile information and to commonly decide which information and definitions are used. Furthermore, communication is also important in order to make information wider available and thus to increase the benefit of the described measures. Communication and participation can also be used to create voluntary agreements between stakeholders which focus on the prevention of pollution and overcrowding or on the moderate use of resources.

5.2.Communication

A. Significance

Another cornerstone that should be enhanced is communication. This aspect becomes especially important when conflicts exist between stakeholders, like it is the case between the different groups of visitors who want to promote the aspect that are beneficial to them, while reducing activities other visitors rely on.

Another point of significance of communication is the fact that misunderstandings and disagreements are present on the Lotseninsel, like the conflict about the form and level of tourism in the future. Here, the misunderstanding is based upon the fear that tourism grows too much, and therefore, disagreement occurs in regard to the promotion of tourism.

Communication is also important since a lack of mutual understanding often reinforces conflicts, misunderstandings and disagreements. Such a lack becomes apparent in regard to the different definitions stakeholders have about nature, the different interpretations of sustainability, the different personally important aspect, and the different values (respectively valuing of supplemental aspects). Communication can help here to facilitate understanding between stakeholders)

B. Target group

In order to prevent an escalation of conflicts between stakeholders, it is necessary to address the involved stakeholders. In this case these stakeholders are the respective groups of visitors who arrive with different means of travel (ferry, sailing boat, motorboat, canoe). Since these are unorganized stakeholders, it is better to address organizations that represent these stakeholders, such as the *Naturnaher Wasserwanderplatz Schleimünde e.V., the Kanuverband Schleswig-Holstein e.V.*, and the shipping companies.

In regard to misunderstandings and disagreements about certain aspects, all the stakeholders who have a stake and opinion must be included. In case of the conflict about tourism in the future, these stakeholders are the different tourism organizations and associated stakeholders as well as the opposition (to be precise, the *shipping companies, Ostseefjord Schlei GmbH, municipality Maasholm, city of Kappeln, Naturnaher Wasserwanderplatz Schleimünde e.V., Kanuverband Schleswig-Holstein e.V., Verein Jordsand, NEZ,* and visitors). However, in order to solve the lack of mutual understanding all stakeholders should be are involved.

C. Solution

The following advices are divided into two parts. The first part describes conflicts where the *Lighthouse Foundation* is not involved, while the second part deals with disagreements where they are not involved. The proposed measures are closely connected and overlap with solutions to enhance participation. The common compilation of information, as advised in section 5.1., can also be achieved with the following measures.

In order to solve conflicts between stakeholders, regular discussion workshops should be introduced. These workshops should be based on the principles of ‘interactive policy making’. This means that the outcome for such workshops is not preset; instead, the different stakeholders come through interaction to the establishment of high-quality agreements and the creation of win-win situations

(Edelenbos, Monnikhof, 2001)). In regard to the conflict between visitors, such an agreement should for example declare in which way the stakeholders would align the contrasting activities without disturbing others. It is evident that such an approach links the cornerstones of communication and participation. However, in regard to the cornerstone communication, the acknowledgement and mutual understanding of the position of the stakeholders stands central in the discussion workshops.

In contrast to the education programs, described in conjunction with the cornerstone information, the discussion workshops do not comprise one-sided interactions, but instead a two-way, joint process (Van Woerkum, 2002). In addition, the *Lighthouse Foundation* should only act as facilitator, who is not involved, but facilitates interactions between the actors. However, this is only possible, if they are not involved in conflicts between stakeholders and do not have a stake.

The tasks of the facilitator during the communication stage are to keep the group focused on the problem, the aim, and the process, while remaining objective. Furthermore, the facilitator needs to establish and maintain a good, respectful atmosphere between the stakeholders during discussions and meetings. This also includes encouraging everyone to get involved, but also to listen to each other and to understand the mutual dependency. It is also necessary to regularly summarize the results of discussions in order to stimulate further discussion. Due to the neutrality of the facilitator, the discussion workshops should take place on the Lotseninsel or in the office of the *Lighthouse Foundation* in Kiel, since these places are neutral as well. This way, no involved stakeholder has an advantage.

In regard to the disagreement about the form and level of tourism in the future, the establishment of regular discussion workshops is advised as well. However, in this case (and other comparable disagreements), the *Lighthouse Foundation* should not act as facilitator, since they have their own opinion, stake, and aim in regard to the topic. Instead, it is advised to introduce a neutral facilitator. That way the *Lighthouse Foundation* is able to properly contribute their position, knowledge, and ambitions to the process, while the neutral facilitator only focuses on the process itself. This is especially beneficial if the *Lighthouse Foundation* wants to attach important criteria, such as sustainable development, to the topic.

Of course, it is also possible that the *Lighthouse Foundation* acts as facilitator as well as stakeholder respectively initiator. In such cases, it is necessary to ensure that the *Lighthouse Foundation* as facilitator is not left out in the process, but instead can get actively involved. Such an approach is called 'interactive methodic working' and is a distinct interpretation of 'interactive policy making' which was used by the former Dutch *Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer* (VROM)[3] (Projectbureau Pegasus, 1998). The advantage here is that the facilitator has more possibilities and influence in regard to the selection of actors, the content of interactions, and the creation of win-win situations.

Disregarding the role of the *Lighthouse Foundation* and the associated applied approach (interactive policy making or interactive methodic working), the discussion workshops should always be set up in

[3] VROM trans.: Ministry of Housing, Spatial Planning and the Environment; since 2010 the Ministerie van Infrastructuur en Milieu (IenM), trans. Ministry of Infrastructure and the Environment.

a similar manner. The first step should be the assignment of the organizational task to the different stakeholders. These organizational tasks are crucial in order to set up an efficient, interactive, and successful process. It is especially important to assign the tasks of the facilitator and the mediators to different actors (Projectbureau Pegasus, 1998). In the second step, the stakeholders should inform each other about their opinions and ideas about the topic. This can be done with help of stakeholder- and interest-matrices. The insight derived from the analysis of 'images of nature' can also be used at this point. During the discussions, the facilitator stimulates the process and the mediator helps to settle differences.

Subsequently, a high-quality agreement can commonly be found – this process is further elaborated in regard to *participation*. However, after the implementation of agreements, it is still necessary to communicate in order to evaluate and improve the agreements.

Lastly, it is important to take into account that that many stakeholders are likely involved in conflicts and disagreements about tourism or similar aspects. Therefore, the workshops should take place in alternating venues (such as in Kappeln, Maasholm, Lotseninsel, Schleswig, Kiel) in order to enhance accessibility.

D. Aim

The discussion meetings enhance communication and bring the stakeholders together. Furthermore, they aim to facilitate a clearer, mutual understanding among the stakeholders. That way, stakeholders can recognize and understand the rights and opinions of the others. This means also that misunderstandings can be cleared up while common definitions can be set up. Furthermore, different information, opinions, and ideas can be compiled with help of communication. In the end, the process becomes thus more integrated and can be balanced more easily.

E. Use of compliances

Several compliances of 'images of nature' with sustainability principles can be used to support the described measures to enhance communication. In general, if discussions have lost their focus or got stuck, it is helpful to remember stakeholders of their commonalities, such as their valuing that the remoteness is the most important aspect and the aesthetical preference of wild nature, as well as the objective that overcrowding must be prevented and the idea to combine nature and tourism. Furthermore, the common wish to improve communication in the future can obviously be very beneficial, because it underlines that stakeholders are willing to get involved. This fulfills an important prerequisite of 'interactive policy making', which say that interactions should be voluntarily.

Nevertheless, it is important to underline that all these compliances are either based on partial similarities which encompass exceptions, or on similarities which do not involve all stakeholders. This makes evident that the compliances need to be processed first in order to make them useable as assistance for conflict resolutions. This should be done with help of communication (as described in regard to the conflict resolutions). That way it is possible to integrate all stakeholders and to compile and discuss the different opinions in order to prevent misunderstandings. Subsequently, with help of participation it becomes possible to reconcile differences.

F. Connection with other cornerstones

The enhancement of communication also lays the foundation for the improvement of participation, since the advised measures and approaches are also applicable to improve the cornerstone *participation*. The benefit of communication, like the mutual understanding as well as the awareness about mutual dependency, is crucial in order to create win-win situations through participation. Furthermore, a good communication brings stakeholders closer to each other. As result, they are more familiar with each other and have more trust. Misunderstandings in regard to participation can be cleared up as well with help of communication, like the different perception of the degree of participation.

In turn, possible problems which can arise during the process to facilitate communication, like a lack of interest and motivation to get involved, can best be solved by enhancing a sense of stewardship with help of participation. In addition, before the advised compliances are used to enhance conflict resolutions, it is necessary that they are processed first with help of participation.

Furthermore, in order to guarantee that the communication heads towards a sustainable outcome, stakeholders must have a common level of knowledge and must understand and internalize the criterion of sustainability. This underlines the connection with information.

5.3.Participation

A. Significance

The last cornerstone that must be improved is stakeholder participation. The reason for the improvement is simply the conflict with the sustainability principle of democracy and participation. This conflict arises because many stakeholders feel not or insufficiently involved in the management and development processes of the Lotseninsel.

Participation becomes also important in regard to the management of the Lotseninsel. Until now, stakeholders have different ideas about it. For example are some stakeholders in favor of the implementation of regulations of the number of visitors, while other stakeholders are against it. However, in order to meet the criteria of the concept of usage and thus become sustainable, regulations must be introduced. Therefore, in order to achieve an effective and supported regulation, participation is needed. Furthermore, many stakeholders focus on a distinct aspect of management (such as accessibility, aesthetics, and freedom). In order to balance and integrate these many, partly contrasting aspect, participation (and communication) is needed as well.

Additionally, participation is necessary in order to solve conflicts which are based upon a lack of trust, as it is the case in regard to the promotion of nature conservation.

B. Target group

In order to enhance participation, it is important to include as many stakeholders as possible. However, in regard to decisions about the management of the Lotseninsel, it might be sufficient in the beginning to only address the stakeholders who are very close connected with the Lotseninsel. That way the process to come to decisions is simplified. Nevertheless, it is necessary to address stakeholders with different ‘images of nature’ in order to integrate all interests.

Conflicts which arise in regard to distinct aspects, such as the promotion of nature conservation, should be solved by especially including supporter and opposition. Furthermore, in this case, stakeholders with the moderate opinion to combine nature and development should be included as well in order to enhance the process to come to solutions. Additionally, stakeholders who want to preserve other aspects than nature, such as the idyll or the beauty, must also be included in this case. That way all different interests are represented.

C. Solutions

The following measures to enhance participation are closely connected with the solutions to facilitate communication. The improvements of both cornerstones are based on the principles of 'interactive policy making' respectively 'interactive methodic working'. As already mentioned, these approaches mean that different stakeholder should be included in a joint process in order to come to high-quality solutions. However, the difference between the two cornerstones is the fact that communication focuses on the negotiations and participation on the decision-making. Therefore, commonly compiled information, opinions, and ideas can also be selected with help of the following measures.

In regard to the management of the Lotseninsel, it is obvious that decisions (and thus also regulations) are better supported if more stakeholders are participating. The same applies to conflicts which are based upon a lack of trust, like the opposition to the promotion of nature conservation.

Therefore, in regard to both conflicts, stakeholders should be included from the beginning and their objections, should be taken into account. Subsequently, the desired conditions of the Lotseninsel can be commonly envisioned, decided, and of course implemented. Since the *Lighthouse Foundation* also has a stake and aim in both conflicts, it is advised that either a neutral facilitator is included or that the *Lighthouse Foundation* functions as facilitator as well as stakeholder. The benefit of the respective approaches is described in section 5.2.

The role as facilitator becomes important since most stakeholders prefer a comparable form of management (a middle course) but nevertheless disagree in regard to the further elaboration of e.g. implementations of regulation. Therefore, the facilitator must always bring the stakeholders together and ensure that they communicate. This can be done by organizing regular management meetings which are build on the already advised discussion workshops. Furthermore, it is necessary to supervise that participators do not lose focus on the problems and the aim. In addition, it must be ensured that commonly decided regulations are not too lax. Especially latter aspect underlines the importance of the *Lighthouse Foundation* to act as stakeholder, since they have the ambition to implement proper regulations.

In general, the following steps form a good way to achieve participation with help of discussion workshops and management meetings. Since communication and participation are closely connected, the first steps are already described in regard to the cornerstone *communication*. These steps are the assignment of organizational tasks and communication about different interests. Concerning the cornerstone *participation*, the next step is now the assignment of the degree of involvement. These degrees determine the influence of actors and distinguish between stakeholders who are only informed, who think and are consulted, who collaborate, and who decide (Projectbureau Pegasus, 1998). It is important to mention at this point that participation can only be

achieved if stakeholders can collaborate and decide. If the stakeholders have the opportunity to collaborate and decide, they can jointly envision and discuss visions of the preferred aspect during a meeting. That way their work is synchronized and they aim at a common goal. Subsequently, the facilitator elaborates the most preferred ideas and presents them during another meeting. During this meeting the stakeholders can again discuss the ideas. In the end, the stakeholders who are involved in the decision-making process can finally come to a high-quality solution which also creates win-win situations.

A different possibility to enhance participation is by implementing joint projects with help of bottom-up approaches. The idea here is that, if a project is initiated and developed by stakeholders themselves, they are more willing to participate due to a feeling of attachment and responsibility. That way the different stakeholders are more motivated to participate. A first opportunity for such a joint project could be the establishment of an exhibition on the Lotseninsel. Other possibilities are beautifications and improvements of distinct places of the Lotseninsel (such as the beach, the barbecue area, or seats), the resolution of distinct problems, such as pollution (with help of commonly organized clean-ups), or the establishment of joint touristic services (like exhibitions between the Lotseninsel and the NEZ).

D. Aim

The aim of the above described measures is to encourage stakeholders to reach high-quality agreements and thus establish win-win situations; in other words to foster decisions which are integrated, balanced, and well-accepted. That also includes the enhancement of support, acceptance, and compliance. Additionally, trust in the *Lighthouse Foundation* as well as among the stakeholders is generated. The aim of joint projects is also the establishment of a sense of stewardship and responsibility. Stakeholders will feel connected with their own projects, and subsequently with the Lotseninsel.

E. Use of compliances

The enhancement of participation can be improved and simplified by several compliances with principles of sustainable development. The similar valuing of remoteness and the common aesthetic experience of wild nature can both be used to bring stakeholders together, since they describe aspects which most of the stakeholders have in common. However, these compliances are based on partial similarities and must thus be processed first before they are used. This means that the few stakeholders who form exceptions are included in a separate communication and participation process. That way differences can be discussed and subsequently reconciled. Only after that they should be used to assist the conflict resolutions.

The common idea to combine nature and tourism can also be a beneficial compliance, because it facilitates the participation process to integrate and balance these opposing forces and thus create win-win situations. Since it is based on a similarity which not includes all stakeholders, it is necessary though to process this compliance just like the other ones.

In regard to the conflicts about management, it can also be beneficial to use the often proposed middle course of management, because this approach tries to combine the opposing opinions about regulations and takes into account the objectives of both. Additionally, if the implementation of

regulations is reasoned with help of the common aim to prevent overcrowding, it might be better supported by the stakeholders.

F. Connection with other cornerstones

After enhancing participation, knowledge and skills of the involved stakeholders can be used to again improve the other cornerstones. However, it is evident that participation can only be successful if a good communication is established, because otherwise stakeholders have no understanding of the position of others and thus cannot come to integrated, balanced, and well-accepted decision.

Furthermore, the improvement of participation also requires a good availability of information, because stakeholders must have access to information in order to be able to participate properly and to make sound decisions. In addition, a lack of information can also be the reason for stakeholders to not participate.

In general, participation is an endeavor which takes a long time and can always be enlarged and improved. With help of the above described advices it is also possible to establish a “collaborative management” (Kay/ Alder, 2005: 159), which is another step to come closer to sustainability. This form of management creates more possibilities to actively involve and empower the stakeholders in the management.

6. Conclusion

The *Lighthouse Foundation* made it to their aim to develop the Lotseninsel in a sustainable way. Therefore, a concept of usage must be created which integrates and balances all the different interests of the stakeholders in order to prevent growing demand and pressure on resources and facilities. This concept must also be well-accepted by the stakeholders in order to be successful. However, more insight is needed to enhance the process to come to such an integrated, balanced, and well-accepted concept of usage. This thesis delivers this knowledge by carrying out a research project about 'images of nature' and by comparing and elaborating this insight with sustainable development requirements. The results of these analyses are used to create an advice and thus an answer to the main research question:

What advice can be given to enhance the process to come to an integrated, balanced and well-accepted concept of usage, based on 'images of nature' of the stakeholders of the Lotseninsel, in order to manage the Lotseninsel in a sustainable and eco-friendly way?

The analysis of the 'images of nature' of the stakeholders reveals that the stakeholders of the Lotseninsel have various points of view, which lead to several differences, but also complete and partial similarities in regard to the dimensions of 'images of nature'.

The normative dimension reveals that many stakeholders regard 'remoteness' as most valuable aspect on the Lotseninsel. Their general valuing differs though due to the different (supplemental) aspects they combine with 'remoteness'. A difference arises in this dimension due to different negative remarks about the Lotseninsel. The preferred form of management forms another point of differences, since stakeholders particularly disagree in regard to the implementation of regulations.

The vision of future development underlines the similarity that stakeholders do not regard nature and tourism as opposing forces, but instead want to combine them. Furthermore, the stakeholders have the common opinions to prevent overcrowding and overexploitation, to reduce noisy activities such as motorboats, and to promote communication and cooperation in the future. In contrast, the stakeholders have different ideas about the future level and form of tourism, nature conservation, and aesthetic aspects. Furthermore, tensions exist between several groups of visitors due to opposing ideas about the future form and level of activities.

The cognitive dimension unveiled that stakeholders have the similar belief that nature is fragile and dynamic, while they have various interpretations of the concept of sustainability and different definitions of nature. Furthermore, they do not have much information about current development measures and are differently involved in the development process. The expressive dimension detects a similarity in regard to the aesthetical experience of nature, since stakeholders prefer wild nature. However, a point of difference arises because stakeholders attach a personal importance to various aspects of the Lotseninsel.

The comparison of this outcome with principles of sustainability reveals that all the similarities are in compliance with distinct requirements, while the differences are in conflict. However, these compliance and conflicts can also be weakened or reinforced due to other compliances and conflicts with the same principles.

In regard to the normative dimension, the similarity in valuing is critical for the success of sustainable development. However, the compliance is weakened since the stakeholders also value other supplemental) aspects. In regard to the differences, especially the few negative remarks which focus on pollution and overcrowding give rise to a conflict with the principle to respect the carrying capacity. Additionally, the different opinions about the management also give rise to conflicts with the same principle, as well as with the precautionary principle, and the principle to balance economical, social, and environmental considerations.

The vision of future development underlines that the similar idea to combine nature and tourism is in compliance with a corresponding principle. Furthermore, the opinion to prevent overcrowding complies with the principles to respect the carrying capacity and to protect the environment. However, these compliances are mitigated due to the conflicts in regard to the future form and level of tourism, nature conservation, and aesthetic aspects. Due to the different opinions about tourism, conflicts also arise with the requirements to satisfy the needs and to ensure economic viability. In turn, the opinion to improve communication and cooperation again complies with the principle of policy integration and participation. The principle of intra-generational equity is also complied since the stakeholders agree to reduce noisy activities. This compliance is weakened though due to the tensions between stakeholders, which also give rise to a conflict with the principle to resolve conflicts.

The similar belief, described in the cognitive dimension, is in compliance with the corresponding requirement that nature should be regarded as being dynamic and fragile. In turn, the different knowledge about current development measures and the concept of sustainability stands in conflict with the principles of information dissemination respectively the promotion of awareness. The difference in regard to involvement of stakeholders also gives rise to a conflict with the principle of democracy and participation. Lastly, the different definitions of nature reinforce the conflicts with the principle to protect the environment. The similarity and difference of the expressive dimension only mitigate or reinforce other compliances and conflicts. The similarity thus reinforces the compliance due to the common belief, while weakens the conflicts due to different opinions about nature conservation and aesthetics. In turn, the difference reinforces all conflicts of the vision of future development and thus complicates the development process.

In order to align the ‘images of nature’ with the requirements of sustainable development, the described conflicts must be solved, while the compliances can help to encourage conflict resolutions. However, some of the compliances must be processed first in order to make them useable.

The compliance of the normative dimension underlines that the similar valuing of ‘remoteness’ is important in order to enhance communication. In turn, the conflict due to negative remarks about overcrowding and pollution can be solved by raising awareness. In order to solve the conflicts in regard to the form of management communication and participation must be enhanced.

In regard to the compliances within the vision of future development, the common opinion to combine nature and tourism can help to balance interests, while the aim to prevent overcrowding can be used as common objective. The opinion to improve communication is obviously beneficial to improve the current situation this aspect. In contrast, conflicts in regard to tourism are based on misunderstandings and can be solved with communication and information. The conflict about nature conservation, which is based on a lack of trust, can be solved with participation, just like the

conflict in regard to aesthetic aspects. In addition, tensions between stakeholders can best be solved with help of communication.

The compliance of the cognitive dimension due to a similar belief benefits the process, because it underlines that stakeholders are ecological responsible. In contrast, the conflicts due to a lack of knowledge can be solved by improving transparency and the availability of information. Furthermore, the conflict due to different definitions about nature needs to be communicated in order to understand each other. Lastly, the conflict in regard to the principle of participation and democracy which arises due to a different degree of involvement can of course be solved with help of participation. In regard to the expressive dimension, the similarity of aesthetical experience can be used to enhance communication between stakeholders, since it is something they have in common. However, it is also important to communicate the different personally important aspects in order to facilitate a better understanding, since this aspect can hamper the process.

This outcome makes evident that especially three cornerstones must be enhanced. These aspects are information, communication and participation. The enhancement of these three cornerstones is necessary since all the described solutions to the conflicts are connected with them. Therefore, an advice is elaborated to improve these three cornerstones and to solve the different conflicts with sustainable development. The compliances can be used here to facilitate the improvement of conflict resolutions. However, beforehand they need to be processed with help of communication and participation in order to include all stakeholders and to reconcile the smallest differences. The advice differently involves organized and unorganized stakeholders. While unorganized stakeholders should only be included in a one-way manner in order to be informed and become aware, the organized stakeholders should actively be involved in the enhancement of all cornerstones.

The cornerstone information should be enhanced by providing information on the Lotseninsel and via internet to all stakeholders. Furthermore, education programs are advised. While unorganized stakeholders should only be informed in this regard, organized stakeholders should also be involved to compile and select the information which is disseminated. However, communication and participation needs to be enhanced beforehand.

In regard to both cornerstones, it is necessary to include as many stakeholders as possible, as well as a facilitator, who is objective and pushes the process forward. Subsequently, communication can be enhanced with help of discussion workshops. These workshops compile the needed information, and also the different opinions and ideas of the stakeholders. That way, understanding is facilitated and disagreements and misunderstandings reconciled. Furthermore, different interests are integrated and can be balanced more easily.

Participation should also be improved with help of discussion workshops as well as management meetings. This cornerstone uses the benefit of the enhancement of communication in order to form high-quality agreements and win-win situations. The benefit of participation at this point is the fact that the support for and quality of decision is improved.

In conclusion, it can be said that the three cornerstones are connected and that the improvements of one, benefits the improvements of the other cornerstones. Therefore, the conflicts with principles of sustainable development should be solved if all three aspects are improved and combined. That way the process to come to an integrated, balanced, and well-accepted concept of usage can be enhanced.

7. Discussion

Although the analysis takes into account many different principles of sustainable development, one important aspect is not taken into account due to the fact that only few or no stakeholders regard it as important. This important ingredient is an "appropriate and ecologically responsible coastal protection measure" and the subsequent requirement that the threats to coastal zone protection are recognized (European Union, 2002: 25, chapter 1, point c). However, the problem here is that coastal protection is an expensive endeavor and the state of Schleswig-Holstein does not facilitate coastal protection projects on the Lotseninsel (Sülzdorff, 2012). New measures are thus too expensive to be paid solely by the *Lighthouse Foundation*. This problem can only be solved in cooperation with other stakeholders. The help of communities and stakeholders offers a number of opportunities to reduce costs, like in the case of coastal protection works in India (Anzdec, 2010). Participation can thus be very beneficial, especially in regard to management and maintenance of coastal protection works.

Another problem which is not included in the analysis arises due to the fact that some stakeholders express their dislike of the gastronomy *Giftbude*. However, because of the fact that the owner was not willing and available for an interview, it becomes difficult to further elaborate this problem. Nevertheless, it can be said that some stakeholders are unsatisfied about the current situation. The reasons are on the one hand an unsatisfying and unfriendly service, and on the other hand the lack of cooperation. In the eyes of several stakeholders the only solution is to wait for the leasing contract to end.

Another point of discussion is the fact that the 'images of nature' of the stakeholders might be affected by certain circumstances. In regard to the stakeholders who were interviewed, especially the expressive dimension can be influenced by the personal perception of the interviewees. This of course reduces the representativeness for a certain institution. Furthermore, the 'image of nature' of visitors who arrive with ferries might be blurred due to the fact that their perception is heavily influenced by specific circumstances at the time of their arrival; especially since most of these visitors come for the first time and only stay half an hour. Their standpoint might thus be different if they come during the week, when the Lotseninsel is less visited than on the weekend. In addition, their perception can also change depending on the weather circumstances and similar variables.

In regard to the outcome of the surveys, it is important to underline that several results are not significant and thus less reliable. However, the results of the larger groups of visitors (visitors who arrive with ferries or sailing boats) are mainly significant, while especially the smaller groups (visitors who arrive with motorboats or with canoes) had to be taken out of the analysis due to insufficient data. In order to solve this problem the sample has to be enlarged the next time in order to make sure that enough participants of the smaller groups are included. This means of course that also the sample of the larger groups must be proportionally enlarged in order to ensure representativeness.

Despite these points of discussion, the insight derived from this study about 'images of nature', can not only be used to enhance the process to come to an integrated, balanced, and well-accepted concept of usage. This is only one step towards sustainability, but the outcome of the analysis is also applicable in many other situations. The knowledge about the different standpoints of the stakeholders can be used in any development process and will improve the effectiveness (Manfredo, 2008), as well as the acceptance and the support (Elands/ Turnhout, 2009).

The knowledge about the 'images of nature' can furthermore be used in regard to the definition of a carrying capacity. It is suggested that there is not only a biophysical carrying capacity but also a facility and social carrying capacity, respectively referring to degradation of the environment, excessive demand of facilities and attitude of locals and visitors (McCool, Lime, 2001). Until now, such a carrying capacity is not established for the Lotseninsel. 'Images of nature' can thus be used to define a social carrying capacity.

Lastly, it is necessary to update this knowledge about 'images of nature' and compliances and conflicts with sustainable development on a regular base, since it is likely that the stakeholders' standpoint changes over time and since new stakeholders can emerge.

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9. Appendix

I. Example of the interview

Bachelor Thesis: Christoph Hoppe **INTERVIEW** Lighthouse Foundation

Date: **Institution:**

Name of the interviewee: **Position within institution:**

As you might know, the Lighthouse Foundation wants to create a sustainable and eco-friendly future for the Lotseninsel by introducing a concept of usage which integrates and balances the different interests and ideas of all the stakeholders. In order to be able to do this, it is necessary to understand the different points of view and opinions of the stakeholders regarding the development of the Lotseninsel. Therefore, interviews are carried out with every interest group of the Lotseninsel to give them the opportunity to declare their point of view. This also includes that the specific perception, the values, knowledge, experiences and visions of future development your institution has in regard to the Lotseninsel, are inquired. The information you provide is used to explore the point of view of your user group. Therefore, it is asked to answer the questions honestly. There is no "right" or "wrong" in this interview. Furthermore, please express the interests, principles and opinions of your institution, and not your own.

Thank you very much for your cooperation!

Duration: ca. 30 minutes

The interview begins with a few questions which enquire the interests of your institution in the Lotseninsel:

1. **How is your institution connected with the Lotseninsel?**
2. **What makes the Lotseninsel so interesting and important for your institution?**
3. **Is there something particular on the Lotseninsel that is very precious to your institution?**
4. **What aspects of the Lotseninsel are not approved by your institution?**

The following questions deal with the development of the Lotseninsel:

5. **How would your institution describe the current situation of the Lotseninsel?**
6. **Which feature of the Lotseninsel would your institution like to promote/improve in the future?**
7. **What feature of the Lotseninsel would your institution like to reduce or not allow in the future?**
8. **How should the management of the Lotseninsel look like in the eyes of your institution?**
    a. **How strong should be interventions of management?**
9. **In which way is your institution involved in the management of the Lotseninsel?**

The last questions finally examine which definition your institution has about nature and associated concepts:

10. **Is the concept of sustainability approved in your institution?**
    a. How is it interpreted?

11. **Suppose that a road is built through a nature reserve. What effect would this intervention have on nature?**
    a. Would nature recover from the intervention?
    b. If so, how long would it take and how would the nature look like afterwards?

12. **Where do you draw the borders of nature? Please indicate whether your institution would describe the following terms as nature or not:**

- City Park
- Garden
- Sun
- Sea
- Cows
- Pets
- Insect
- Weeds
- Fish
- Rape fields
- Corn fields

13. **What form of nature is more appealing to your institution and why?**
    - Wild, unorganized nature, where everything grows all over the place
    - Neat, tidy nature, that is in good order

II. Example of the survey

Bachelor thesis: Christoph Hoppe SURVEY Lighthouse Foundation

Dear Ladies and Gentleman,

The Lighthouse Foundation – the owner of the Lotseninsel - has made it to their aim to create a sustainable and eco-friendly future for the Lotseninsel by establishing a concept of usage. This concept of usage wants to integrate and balance the different interests and ideas of all the different users. In order to be able to do this, it is necessary to understand the different points of view and opinions of the stakeholders regarding the development of the Lotseninsel. This survey is carried out to explore this point of view and opinions of the people visiting the Lotseninsel. It inquires distinct perceptions, values, knowledge, experience and visions of future development. Each answered questionnaire helps to explore the opinions of the visitors and is thus important and valuable. Therefore, it is asked to answer the questions honestly. There is no "right" or "wrong" in this interview. The answers are kept in confidence and anonymous and are not given to third parties.

Duration: 5 to 10 minutes **Date**:

1. How old are you?

- ○ Under 18
- ○ 18 – 30 years
- ○ 30 – 50 years
- ○ 50 – 70 years
- ○ Older than 70 years

2. Gender:

- ○ Male
- ○ Female

3. With whom are you visiting the Lotseninsel?

- ○ Alone
- ○ With my partner
- ○ With my children
- ○ With friends
- ○ With my (sports) club
- ○ Family
- ○ Others: _____

4. How long are you staying on the Lotseninsel?

- ○ Brief visit (less than 6 hours)
- ○ 1 overnight stay
- ○ up to 3 days
- ○ up to 1 week

5. How often do you visit the Lotseninsel?

- ○ The first time
- ○ Once every couple of years
- ○ One time per year
- ○ More often

6. How did you arrive at the Lotseninsel?

- ○ With ferry (public)
- ○ with private motorboat
- ○ With private sailing boat
- ○ With canoe, kayak, etc.

7. What is for you the most important reason to come to the Lotseninsel?

- ○ Peace & Seclusion
- ○ Nature (flora & fauna)
- ○ View, beauty and aesthetics
- ○ Water sports,
- ○ Cultural events
- ○ Social Contacts
- ○ Other: _____

8. With what aspects of the Lotseninsel you do not approve of? (multiple responses allowed)

- ○ None; I like everything
- ○ Noise & Pollution
- ○ Rush of people
- ○ Wild nature
- ○ Poor transport links
- ○ Not enough tourist facilities (food, sanitary facilities, accommodations)
- ○ Too many tourist facilities
- ○ Not enough possibilities for leisure, sport and entertainment
- ○ Too much possibilities for leisure, sport and entertainment
- ○ Other: _____

9. What form of nature is generally more appealing to you?

- ○ Wild, unorganized nature, where everything grows all over the place
- ○ Neat, tidy nature, that is in good order

10. What aspect of the Lotseninsel would you like to find there also in the future? Please indicate on a scale from 1 to 4, if you would heavily promote (=4), promote a bit (=3), reduce a bit (=2), or heavily reduce or not allow (=1) the following aspects of the Lotseninsel

○ Preservation of nature		○ Sailing	
○ Protection of biodiversity		○ Motorboats, etc.	
○ Water sports		○ Fishing	
○ Cultural events		○ Job opportunities	
○ Tourism in general		○ Renewable Energies (solar, wind)	
○ Ferry service		○ Other: _____	

11. Now, a few arguments regarding the management of nature are stated. Please indicate on a scale from 1 to 4, if you agree with these statement (1 = I do not agree at all; …; 4 I totally agree):

○ An authentic and healthy nature can only be formed in absence of humans.	
○ Humans should only take action in nature when it comes to welfare of animals	
○ In order to ensure that nature looks beautiful, human intervention is often required.	
○ A prerequisite for a healthy nature is generally that humans manage and intervene.	
○ People should take advantage of the productive functions of nature.	

12. The idea of sustainability and sustainable management became quite popular over the last years in the management of nature reserves. Are you familiar with this principle?

○ No, never heard of it

○ Yes, I means:
_____

○ Yes, I heard of it, but I do not exactly know what it implies
_____

13. Suppose that a road is built through a nature reserve. How would you judge the impact on nature of such an intervention? Please choose one of the statements.

○ The nature cannot bear the impact of an intervention and will not recover.

○ The nature can only recover slowly and will have another shape than before.

○ The nature can recover and will to its original shape.

○ The nature can absorb the intervention quite well and adapts quickly to the new situation.

14. Where do you draw the borders of nature? Please tick all the boxes next to the terms you regard as nature (more than on answer possible):

○ City Park	○ Sea	○ Insect	○ Rape fields
○ Garden	○ Cows	○ Weeds	○ Corn fields
○ Sun	○ Pets	○ Fish	

15. Is there something on the Lotseninsel that is very precious to you in a personal way?

_____

16. Do you want to get involved with the development of the Lotseninsel?

○ Yes ○ No ○ I am already involved

Thank you very much for your cooperation!

III. Method of the statistical analysis of the surveys

The collected surveys were analyzed with help of the statistic program SPSS15, in order to assign an 'image of nature' to the different groups of visitors. First, a chi-square goodness-of-fit test was conducted in order to assess whether the population of the different visitors groups of the sample are in proportion to the actual numbers of visitor groups. These actual frequencies were taken from estimations of numbers of visitors (cf. section 2.2.3.). Therefore, it was expected that 15000 people arrive with ferries, 8500 with private sailing boats, 1500 with private motorboats and 600 with canoes, kayaks, etc. The targeted significance level was p=5%. This meant that the result of the statistical test had at least a 95% chance of being true; respectively maximally a 5% chance of not being true. The three requirements for the chi-square test (randomly drawn sample, mutually exclusivity of independent variables, and expected frequencies above 5) were fulfilled in this case.

Since most the questions of the survey were scaled nominal or ordinal, the statements of the sampled population were mainly analyzed with frequency calculations, which indicated how often a certain answer occurred in the data set. In order to figure out the quantity of given answers divided by the different groups of visitors, cross tabulations were used. Additionally, in case of normative scaled questions, chi-square independency tests were used to detect whether the answers given by distinct groups differed from each other. The targeted significance level was again p=5%. If a chi-square could not be carried out, because the requirement of expected frequencies above 5 was not fulfilled due to insufficient data for a distinct group, the answers were reorganized (this is the case for question 8 &9). If the chi-square test was still invalid due to an expected count below 5, the smallest category (canoe, kayak, etc.) was taken out. Furthermore, if the answers could not be combined (question 10, 13, 14, 15, 17), Fisher's exact test came to fruition. This statistical test is normally used when the sample is small, but it is also valid for all sample sizes (König, 1974). It determined, just like the chi-square test, whether the answers of the different groups could be distinguished. If the results of these tests were not significant (that means p> 0.05), it was assumed that the answers do not differ between the distinct groups. Instead, it was assumed that the total frequency of answers accounts for the whole sample.

In respect to ordinal scaled questions (question 11 & 12) a chi-square test was not applicable. Therefore, a Kruskal-Wallis-test was carried out, in order to detect whether there were differences between the several groups and their different ratings of certain aspects. The significance level was here also p=5%. In case that no aspect showed significance, a Friedman test was applied per group. If within a group this test detected significance (p>0.05), it meant that the ratings of the different aspects within one group were different. If there was still no significance the concerned group was taken out. In case of significance, a *post-hoc* analysis with Wilcoxon Signed-Rank Tests was conducted afterwards, to detect which aspects within a group exactly showed different ratings. Here, it was important to apply a Bonferroni correction, which meant that the significance level was corrected by dividing it by the number of tests carried out. However, the final assignment of 'images of nature' was especially based on significant results of the analysis. The results of the analysis can be found in the next appendix.

IV. Results of the statistical analysis of the survey

In order to evaluate whether the survey sample is proportional and represents the estimated frequency distribution, a chi-square goodness of fit test was conducted. Since the sample was randomly drawn from the total number of visitors and since the categories for the variable "means of travel" were mutually exclusive, two of three requirements for such a test were fulfilled. The result of this chi-square test shows that the third requirement was accomplished as well, because no category has expected frequencies of less than five. Furthermore, the outcome displays a statistically significance, $X^2[3] = 6.786$, p= 0.079 (cf. Figure 21). The significance or p-value of this test is p=0.079 and is greater than the significance level of 5%. Therefore, the null hypothesis that the sample is representative in terms of the variable "means of travel to the Lotseninsel" is retained.

Means of travel

	Observed N	Expected N	Residual
Ferry	121	137,7	-16,7
Private sailing boat	86	78,0	8,0
Private motorboat	20	13,8	6,2
Canoe, kayak, etc.	8	5,5	2,5
Total	235		

Test Statistics

	Means of travel
Chi-Square(a)	6,786
df	3
Asymp. Sig.	,079

a 0 cells (,0%) have expected frequencies less than 5. The minimum expected cell frequency is 5,5.

Figure 21: Test of representation - chi-square goodness of fit test

Normative dimension

In regard to the normative dimension, the first statistical test which was carried, was a cross tabulation in conjunction with a chi-square test. This test shows that a difference exists between the means of travel and the reasons to visit the Lotseninsel, $X^2[18] = 125.307$, p=0.0001 (cf. Figure 22). The null hypothesis that the answers about the reason to visit the Lotseninsel are similar between the different groups can thus be rejected. However, the third requirement of the chi-square test for independence is violated because more than 20% of the categories have an expected value below 5 (see below chi-square test). Therefore, the reasons to visit the Lotseninsel are combined in order to achieve a valid chi-square test result. The manner of combination of reasons is described in Figure 23, below the table.

The outcome of this combination is valid since no category has an expected value below 5. Furthermore, it detects a difference between the means of travel and the combined reasons to visit the Lotseninsel, $X^2[9] = 53,871$, p=0.0001 (cf. Figure 23). Therefore, this outcome could be used to figure out which aspect the different groups of visitors regard as most important on the Lotseninsel.

Reason to visit the Lotseninsel

			Reason to visit Lotseninsel					
			pos. peace	pos. nature	pos. beauty	pos. sport	pos. social	pos. culture
Means of travel	Ferry	Count	36	59	72	1	4	12
		Row Responses %	19,6%	32,1%	39,1%	,5%	2,2%	6,5%
	Private sailing boat	Count	57	46	53	36	17	4
		Row Responses %	26,8%	21,6%	24,9%	16,9%	8,0%	1,9%
	Private motorboat	Count	9	6	11	3	4	4
		Row Responses %	24,3%	16,2%	29,7%	8,1%	10,8%	10,8%
	Canoe, kayak, etc.	Count	7	3	4	5	0	0
		Row Responses %	36,8%	15,8%	21,1%	26,3%	,0%	,0%
	TOTAL	Count	109	114	140	45	25	20
		Row Responses %	24,1%	25,2%	30,9%	9,9%	5,5%	4,4%

Pearson Chi-Square Tests

		Reason to visit Lotseninsel
Means of travel	Chi-square	125,307
	df	18
	Sig.	,000(*,a,b)

Results are based on nonempty rows and columns in each innermost subtable.
* The Chi-square statistic is significant at the 0.05 level.
a More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.
b The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Figure 22: Means of travel & Reason to visit - Cross tabulation and associated chi-square test

Combined reasons to visit Lotseninsel

			Combined reasons to visit Lotseninsel		
			pos. eco	pos. utility	pos. beauty
Means of travel	Ferry	Count	78	16	72
		Row Responses %	47,0%	9,6%	43,4%
	Private sailing boat	Count	68	48	53
		Row Responses %	40,2%	28,4%	31,4%
	Private motorboat	Count	12	9	11
		Row Responses %	37,5%	28,1%	34,4%
	Canoe, kayak, etc.	Count	7	5	4
		Row Responses %	43,8%	31,3%	25,0%
	TOTAL	Count	165	78	140
		Row Responses %	43,1%	20,4%	36,6%

The reason to visit the Lotseninsel are combined in order to carry out a valid chi-square test.
eco = peace + nature
utility = sport + culture + social contacts

Pearson Chi-Square Tests

		Reason to visit Lotseninsel based on values
Means of travel	Chi-square	53,871
	df	9
	Sig.	,000(*)

Results are based on nonempty rows and columns in each innermost subtable.
* The Chi-square statistic is significant at the 0.05 level.

Figure 23: Means of travel & combined reason to visit - Cross tabulation and associated chi-

The next step of the statistical analysis in regard to the normative dimension revealed that a difference exists between the means of travel and the perception of negative aspects, $X^2[30]=47.049$, p=0,025 (cf. Figure 24). The null hypothesis that the answers about negative aspects are similar between the different groups can thus be rejected. However, the third requirement of the chi-square test for independence is violated, because more than 20% of the categories have an expected value

below 5. Therefore, the negative aspects are combined, in order to achieve a valid and significant chi-square test result (see Figure 24 & Figure 25).

The test with the combined negative aspects (the manner of combination is described below the table of Figure 25) is only valid if the group of visitors with canoes is taken out. The result shows that no category has an expected value below 5. Furthermore, it reveals that a difference exists between the means of travel and the combined negative aspects, $X^2[6] = 15.439$, p=0.017 (cf. Figure 25). Therefore, this outcome could be used to detect what negative remarks the different groups of visitors have about the Lotseninsel.

Negative aspects of the Lotseninsel

			Negative aspects of the Lotseninsel									
			neg. None	neg. Noise/Pollution	neg. Rush of people	neg. Wild nature	neg. transport	neg. not enough tourism facilities	neg. too much tourism facilities	neg. not enough entertainment	neg. too much entertainment	neg. other
Means of travel	Ferry	Count	72	14	18	1	5	16	3	4	0	3
		Row Responses %	52,9%	10,3%	13,2%	,7%	3,7%	11,8%	2,2%	2,9%	,0%	2,2%
	Private sailing boat	Count	42	17	27	0	0	9	5	0	1	11
		Row Responses %	37,5%	15,2%	24,1%	,0%	,0%	8,0%	4,5%	,0%	,9%	9,8%
	Private motorboat	Count	9	2	7	0	2	2	1	2	0	2
		Row Responses %	33,3%	7,4%	25,9%	,0%	7,4%	7,4%	3,7%	7,4%	,0%	7,4%
	Canoe, kayak, etc.	Count	5	2	1	0	1	2	0	0	0	1
		Row Responses %	41,7%	16,7%	8,3%	,0%	8,3%	16,7%	,0%	,0%	,0%	8,3%
	TOTAL	Count	128	35	53	1	8	29	9	6	1	17
		Row Responses %	44,6%	12,2%	18,5%	,3%	2,8%	10,1%	3,1%	2,1%	,3%	5,9%

Pearson Chi-Square Tests

		Negative aspects of the Lotseninsel
Means of travel	Chi-square	47,049
	df	30
	Sig.	,025(*,a,b)

Results are based on nonempty rows and columns in each innermost subtable.
* The Chi-square statistic is significant at the 0.05 level.
a More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.
b The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Figure 24: Means of travel & negative aspects - Cross tabulation and associated chi-square test

Combined negative aspects of the Lotseninsel

			Combined negative aspects of the Lotseninsel		
			neg. None	Eco_q10	Utility_q10
Means of travel	Ferry	Count	72	28	21
		Row Responses %	59,5%	23,1%	17,4%
	Private sailing boat	Count	42	36	9
		Row Responses %	48,3%	41,4%	10,3%
	Private motorboat	Count	9	8	5
		Row Responses %	40,9%	36,4%	22,7%
	TOTAL	Count	123	72	35
		Row Responses %	53,5%	31,3%	15,2%

Negative aspects are combined in order to carry out a valid chi-square test.
eco = noise/ pollution, rush of people, too much tourist facilities, too much entertainment
utility = wild nature, transport, not enough facilities, not enough entertainment
the category "other" and the subgroup "canoe, kayak, etc." had to be excluded to achieve a valid chi-square result

Pearson Chi-Square Tests

		Combined negative aspects of the Lotseninsel
Means of travel	Chi-square	15,439
	df	6
	Sig.	,017(*)

Results are based on nonempty rows and columns in each innermost subtable.
* The Chi-square statistic is significant at the 0.05 level.

Figure 25: Means of travel & combined negative aspects - Cross tabulation and associated chi-square test

The last step of the statistical analysis in regard to the normative dimension was to figure the preferred form of management of the different groups of visitors with help of the different ratings of the different ideas of management (cf. Figure 26 and Figure 27). However, a Kruskal-Wallis-test could not detect a significant difference of the ratings between the different means of travel, $X^2(3) = 4.406$, $p = 0.221$; $X^2(3) = 3.223$, $p = 0.358$; $X^2(3) = 1.518$, $p = 0.678$; $X^2(3) = 1.242$, $p = 0.743$; $X^2(3) = 0.254$, $p = 0.968$ (cf. Figure 27). Therefore, the Friedman test was applied for each group (see figure 13).

The outcome of the Friedman test shows that each group, with exception of canoeists, shows significance, $X^2(4) = 73.713$, $p = 0.0001$; $X^2(4) = 13.533$, $p = 0.009$; $X^2(4) = 66.094$, $p = 0.0001$; $X^2(4) = 3.926$, $p = 0.416$ (cf. Figure 28). The null hypothesis, that rating of the different ideas of management within these groups equal, is therefore rejected. In the next step, the different ideas of management were compared within each of these groups. In case of the group of people who arrive with canoes, the null hypothesis is retained and therefore, this group is taken out in the further analysis of the ideas of management.

The outcome of Figure 28 is analyzed in more detail with a Post-hoc Wilcoxon Signed-Rank Tests. That means that two forms of management are always compared to each other. In addition, a Bonferroni correction is applied, resulting in a new significance level of $p=0.005$. In regard to the group of people who arrive with ferries, the result shows that most combinations are significant (with exception of three). Therefore, the null hypothesis that the ratings of the forms of management is similar, within the groups of people who arrive with ferries, can be rejected. In case of the combination 1, 7 & 8[4], which are not significant, the null hypothesis is retained (cf. Figure 29). In respect to the group of people who arrive with sailing boat, the result reveals that 5 combinations are significant, and 5 not. The null hypothesis, that the ratings of the forms of management is similar, within the groups of people who arrive with sailing boats, can only be rejected in case of combination 2, 3, 5, 6 & 10 (cf. Figure 30). Lastly, concerning the group of people who arrive with motorboats, only two combinations are significant. Therefore, the null hypothesis that the ratings of the forms of management is similar, within the groups of people who arrive with motorboats, can only be rejected in category 5 & 6. In the remaining categories which are not significant the null hypothesis is retained (cf. Figure 31)

[4] The 1st combination is presented in the 1st row of the table. The 2nd combination is described in the 2nd row, etc. The same definition is applicable for Figure 29 to 31.

Means of travel * hands-off mgmt Crosstabulation

			hands-off mgmt				
			absolutely disagree	disagree	agree	absolutely agree	Total
Means of travel	Ferry	Count	26	12	33	50	121
		% within Means of travel	21,5%	9,9%	27,3%	41,3%	100,0%
	Private sailing boat	Count	18	9	23	36	86
		% within Means of travel	20,9%	10,5%	26,7%	41,9%	100,0%
	Private motorboat	Count	4	2	8	6	20
		% within Means of travel	20,0%	10,0%	40,0%	30,0%	100,0%
	Canoe, kayak, etc.	Count	3	1	4	0	8
		% within Means of travel	37,5%	12,5%	50,0%	,0%	100,0%
Total		Count	51	24	68	92	235
		% within Means of travel	21,7%	10,2%	28,9%	39,1%	100,0%

Means of travel * animals mgmt Crosstabulation

			animals mgmt				
			absolutely disagree	disagree	agree	absolutely agree	Total
Means of travel	Ferry	Count	31	29	25	36	121
		% within Means of travel	25,6%	24,0%	20,7%	29,8%	100,0%
	Private sailing boat	Count	23	13	23	27	86
		% within Means of travel	26,7%	15,1%	26,7%	31,4%	100,0%
	Private motorboat	Count	3	2	6	9	20
		% within Means of travel	15,0%	10,0%	30,0%	45,0%	100,0%
	Canoe, kayak, etc.	Count	2	2	2	2	8
		% within Means of travel	25,0%	25,0%	25,0%	25,0%	100,0%
Total		Count	59	46	56	74	235
		% within Means of travel	25,1%	19,6%	23,8%	31,5%	100,0%

Means of travel * beauty mgmt Crosstabulation

			beauty mgmt				
			absolutely disagree	disagree	agree	absolutely agree	Total
Means of travel	Ferry	Count	62	24	23	12	121
		% within Means of travel	51,2%	19,8%	19,0%	9,9%	100,0%
	Private sailing boat	Count	48	17	7	14	86
		% within Means of travel	55,8%	19,8%	8,1%	16,3%	100,0%
	Private motorboat	Count	8	4	6	2	20
		% within Means of travel	40,0%	20,0%	30,0%	10,0%	100,0%
	Canoe, kayak, etc.	Count	5	1	1	1	8
		% within Means of travel	62,5%	12,5%	12,5%	12,5%	100,0%
Total		Count	123	46	37	29	235
		% within Means of travel	52,3%	19,6%	15,7%	12,3%	100,0%

Means of travel * productive mgmt Crosstabulation

			productive mgmt				
			absolutely disagree	disagree	agree	absolutely agree	Total
Means of travel	Ferry	Count	46	22	24	29	121
		% within Means of travel	38,0%	18,2%	19,8%	24,0%	100,0%
	Private sailing boat	Count	30	26	8	22	86
		% within Means of travel	34,9%	30,2%	9,3%	25,6%	100,0%
	Private motorboat	Count	5	7	5	3	20
		% within Means of travel	25,0%	35,0%	25,0%	15,0%	100,0%
	Canoe, kayak, etc.	Count	1	4	2	1	8
		% within Means of travel	12,5%	50,0%	25,0%	12,5%	100,0%
Total		Count	82	59	39	55	235
		% within Means of travel	34,9%	25,1%	16,6%	23,4%	100,0%

Means of travel * intervention mgmt Crosstabulation

			intervention mgmt				
			absolutely disagree	disagree	agree	absolutely agree	Total
Means of travel	Ferry	Count	66	27	14	14	121
		% within Means of travel	54,5%	22,3%	11,6%	11,6%	100,0%
	Private sailing boat	Count	47	23	6	10	86
		% within Means of travel	54,7%	26,7%	7,0%	11,6%	100,0%
	Private motorboat	Count	9	3	6	2	20
		% within Means of travel	45,0%	15,0%	30,0%	10,0%	100,0%
	Canoe, kayak, etc.	Count	5	0	2	1	8
		% within Means of travel	62,5%	,0%	25,0%	12,5%	100,0%
Total		Count	127	53	28	27	235
		% within Means of travel	54,0%	22,6%	11,9%	11,5%	100,0%

Figure 26: Means of travel & rating on different forms of management

Ranks

	Mean of travel	N	Mean Rank
hands-off mgmt	Ferry	121	120,05
	Private sailing boat	86	120,70
	Private motorboat	20	112,20
	Canoe, kayak, etc.	8	72,44
	Total	235	
animals mgmt	Ferry	121	114,10
	Private sailing boat	86	118,52
	Private motorboat	20	142,13
	Canoe, kayak, etc.	8	111,13
	Total	235	
beauty mgmt	Ferry	121	118,48
	Private sailing boat	86	114,84
	Private motorboat	20	132,60
	Canoe, kayak, etc.	8	108,19
	Total	235	
intervention mgmt	Ferry	121	117,46
	Private sailing boat	86	115,55
	Private motorboat	20	132,45
	Canoe, kayak, etc.	8	116,38
	Total	235	
productive mgmt	Ferry	121	117,93
	Private sailing boat	86	116,52
	Private motorboat	20	121,03
	Canoe, kayak, etc.	8	127,44
	Total	235	

Test Statistics(a,b)

	hands-off mgmt	animals mgmt	beauty mgmt	intervention mgmt	productive mgmt
Chi-Square	4,406	3,223	1,518	1,242	,254
df	3	3	3	3	3
Asymp. Sig.	,221	,358	,678	,743	,968

a Kruskal Wallis Test
b Grouping Variable: Mean of transportation

Figure 27: Outcome of the Kruskal-Wallis-test with as input the data displayed in Figure 22

Friedman test for ferry

Ranks

	Mean Rank
hands-off mgmt	3,67
animals mgmt	3,33
beauty mgmt	2,52
intervention mgmt	2,42
productive mgmt	3,05

Test Statistics(a)

N	121
Chi-Square	73,713
df	4
Asymp. Sig.	,000

a Friedman Test

Friedman test for motorboat

Ranks

	Mean Rank
hands-off mgmt	3,33
animals mgmt	3,80
beauty mgmt	2,53
intervention mgmt	2,55
productive mgmt	2,80

Test Statistics(a)

N	20
Chi-Square	13,533
df	4
Asymp. Sig.	,009

a Friedman Test

Friedman test for sailing boat

Ranks

	Mean Rank
hands-off mgmt	3,75
animals mgmt	3,48
beauty mgmt	2,48
intervention mgmt	2,37
productive mgmt	2,93

Test Statistics(a)

N	86
Chi-Square	66,094
df	4
Asymp. Sig.	,000

a Friedman Test

Friedman test for canoe, kayak,

Ranks

	Mean Rank
hands-off mgmt	3,25
animals mgmt	3,44
beauty mgmt	2,50
intervention mgmt	2,50
productive mgmt	3,31

Test Statistics(a)

N	8
Chi-Square	3,928
df	4
Asymp. Sig.	,416

a Friedman Test

Figure 28: Outcome of the Friedman test for each group

Ranks

		N	Mean Rank	Sum of Ranks
animals mgmt - hands-off mgmt	Negative Ranks	49(a)	39,03	1912,50
	Positive Ranks	27(b)	37,54	1013,50
	Ties	45(c)		
	Total	121		
beauty mgmt - hands-off mgmt	Negative Ranks	74(d)	47,18	3491,00
	Positive Ranks	19(e)	46,32	880,00
	Ties	28(f)		
	Total	121		
intervention mgmt - hands-off mgmt	Negative Ranks	77(g)	48,93	3767,50
	Positive Ranks	19(h)	46,76	888,50
	Ties	25(i)		
	Total	121		
productive mgmt - hands-off mgmt	Negative Ranks	60(j)	49,53	2971,50
	Positive Ranks	32(k)	40,83	1306,50
	Ties	29(l)		
	Total	121		
beauty mgmt - animals mgmt	Negative Ranks	63(m)	45,23	2849,50
	Positive Ranks	23(n)	38,76	891,50
	Ties	35(o)		
	Total	121		
intervention mgmt - animals mgmt	Negative Ranks	64(p)	42,80	2739,00
	Positive Ranks	18(q)	36,89	664,00
	Ties	39(r)		
	Total	121		
productive mgmt - animals mgmt	Negative Ranks	51(s)	43,46	2216,50
	Positive Ranks	35(t)	43,56	1524,50
	Ties	35(u)		
	Total	121		
intervention mgmt - beauty mgmt	Negative Ranks	29(v)	26,83	778,00
	Positive Ranks	23(w)	26,09	600,00
	Ties	69(x)		
	Total	121		
productive mgmt - beauty mgmt	Negative Ranks	20(y)	33,50	670,00
	Positive Ranks	47(z)	34,21	1608,00
	Ties	54(aa)		
	Total	121		
productive mgmt - intervention mgmt	Negative Ranks	10(bb)	24,55	245,50
	Positive Ranks	40(cc)	25,74	1029,50
	Ties	71(dd)		
	Total	121		

Test Statistics(c)

	animals mgmt - hands-off mgmt	beauty mgmt - hands-off mgmt	intervention mgmt - hands-off mgmt	productive mgmt - hands-off mgmt	beauty mgmt - animals mgmt	intervention mgmt - animals mgmt	productive mgmt - animals mgmt	intervention mgmt - beauty mgmt	productive mgmt - beauty mgmt	productive mgmt - intervention mgmt
Z	-2,382(a)	-5,090(a)	-5,350(a)	-3,290(a)	-4,290(a)	-4,877(a)	-1,512(a)	-,841(a)	-2,976(b)	-3,848(b)
Asymp. Sig. (2-tailed)	,017	,000	,000	,001	,000	,000	,130	,400	,003	,000

a Based on positive ranks.
b Based on negative ranks.
c Wilcoxon Signed Ranks Test

Figure 29: Post-hoc analysis with Wilcoxon Signed-Rank Tests for the group of visitors who arrive with ferries

Ranks

		N	Mean Rank	Sum of Ranks
animals mgmt - hands-off mgmt	Negative Ranks	35(a)	27,51	963,00
	Positive Ranks	21(b)	30,14	633,00
	Ties	30(c)		
	Total	86		
beauty mgmt - hands-off mgmt	Negative Ranks	53(d)	33,92	1798,00
	Positive Ranks	14(e)	34,29	480,00
	Ties	19(f)		
	Total	86		
intervention mgmt - hands-off mgmt	Negative Ranks	57(g)	33,53	1911,00
	Positive Ranks	11(h)	39,55	435,00
	Ties	18(i)		
	Total	86		
productive mgmt - hands-off mgmt	Negative Ranks	51(j)	34,07	1737,50
	Positive Ranks	21(k)	42,40	890,50
	Ties	14(l)		
	Total	86		
beauty mgmt - animals mgmt	Negative Ranks	46(m)	30,39	1398,00
	Positive Ranks	12(n)	26,08	313,00
	Ties	28(o)		
	Total	86		
intervention mgmt - animals mgmt	Negative Ranks	53(p)	32,20	1706,50
	Positive Ranks	11(q)	33,95	373,50
	Ties	22(r)		
	Total	86		
productive mgmt - animals mgmt	Negative Ranks	39(s)	28,78	1122,50
	Positive Ranks	19(t)	30,97	588,50
	Ties	28(u)		
	Total	86		
intervention mgmt - beauty mgmt	Negative Ranks	15(v)	19,30	289,50
	Positive Ranks	16(w)	12,91	206,50
	Ties	55(x)		
	Total	86		
productive mgmt - beauty mgmt	Negative Ranks	14(y)	20,82	291,50
	Positive Ranks	30(z)	23,28	698,50
	Ties	42(aa)		
	Total	86		
productive mgmt - intervention mgmt	Negative Ranks	14(bb)	23,39	327,50
	Positive Ranks	36(cc)	26,32	947,50
	Ties	36(dd)		
	Total	86		

Test Statistics(c)

	animals mgmt - hands-off mgmt	beauty mgmt - hands-off mgmt	intervention mgmt - hands-off mgmt	productive mgmt - hands-off mgmt	beauty mgmt - animals mgmt	intervention mgmt - animals mgmt	productive mgmt - animals mgmt	intervention mgmt - beauty mgmt	productive mgmt - beauty mgmt	productive mgmt - intervention mgmt
Z	-1,367(a)	-4,205(a)	-4,593(a)	-2,413(a)	-4,265(a)	-4,536(a)	-2,102(a)	-,827(a)	-2,408(b)	-3,051(b)
Asymp. Sig. (2-tailed)	,172	,000	,000	,016	,000	,000	,036	,408	,016	,002

a Based on positive ranks.
b Based on negative ranks.
c Wilcoxon Signed Ranks Test

Figure 30: Post-hoc analysis with Wilcoxon Signed-Rank Tests for the group of visitors who arrive with sailing

Ranks

		N	Mean Rank	Sum of Ranks
animals mgmt - hands-off mgmt	Negative Ranks	4(a)	8,88	35,50
	Positive Ranks	9(b)	6,17	55,50
	Ties	7(c)		
	Total	20		
beauty mgmt - hands-off mgmt	Negative Ranks	10(d)	8,10	81,00
	Positive Ranks	4(e)	6,00	24,00
	Ties	6(f)		
	Total	20		
intervention mgmt - hands-off mgmt	Negative Ranks	11(g)	8,55	94,00
	Positive Ranks	4(h)	6,50	26,00
	Ties	5(i)		
	Total	20		
productive mgmt - hands-off mgmt	Negative Ranks	10(j)	8,45	84,50
	Positive Ranks	5(k)	7,10	35,50
	Ties	5(l)		
	Total	20		
beauty mgmt - animals mgmt	Negative Ranks	11(m)	6,77	74,50
	Positive Ranks	1(n)	3,50	3,50
	Ties	8(o)		
	Total	20		
intervention mgmt - animals mgmt	Negative Ranks	11(p)	7,73	85,00
	Positive Ranks	2(q)	3,00	6,00
	Ties	7(r)		
	Total	20		
productive mgmt - animals mgmt	Negative Ranks	11(s)	8,18	90,00
	Positive Ranks	3(t)	5,00	15,00
	Ties	6(u)		
	Total	20		
intervention mgmt - beauty mgmt	Negative Ranks	2(v)	4,50	9,00
	Positive Ranks	3(w)	2,00	6,00
	Ties	15(x)		
	Total	20		
productive mgmt - beauty mgmt	Negative Ranks	5(y)	6,20	31,00
	Positive Ranks	7(z)	6,71	47,00
	Ties	8(aa)		
	Total	20		
productive mgmt - intervention mgmt	Negative Ranks	4(bb)	5,38	21,50
	Positive Ranks	7(cc)	6,36	44,50
	Ties	9(dd)		
	Total	20		

Test Statistics(c)

	animals mgmt - hands-off mgmt	beauty mgmt - hands-off mgmt	intervention mgmt - hands-off mgmt	productive mgmt - hands-off mgmt	beauty mgmt - animals mgmt	intervention mgmt - animals mgmt	productive mgmt - animals mgmt	intervention mgmt - beauty mgmt	productive mgmt - beauty mgmt	productive mgmt - intervention mgmt
Z	-,714(a)	-1,814(b)	-1,961(b)	-1,422(b)	-2,832(b)	-2,798(b)	-2,430(b)	-,414(b)	-,644(a)	-1,058(a)
Asymp. Sig. (2-tailed)	,475	,070	,050	,155	,005	,005	,015	,679	,519	,290

a Based on negative ranks.
b Based on positive ranks.
c Wilcoxon Signed Ranks Test

Figure 31: Post-hoc analysis with Wilcoxon Signed-Rank Tests for the group of visitors who arrive with

Vision of future development

In regard to the vision of future development, the ratings of aspects which should be promoted or reduced in the future were assessed. The Kruskal-Wallis-test unveiled that only for some aspects a significant difference exists in the ratings of the different means of travel (cf. Figure 32 & Figure 33). For these aspects the hypothesis that the ratings of the different visitor groups is similar, can be rejected. This is only the case for the aspects of water sports (p=0.0001), tourism (p=0.027), ferry service (p= 0.0001), and sailing (p=0.0001). The aspects of protection of biodiversity, cultural events, fishing, job opportunities, and renewable energies do not display a significant tendency and thus the null hypothesis is retained. These aspects are used to describe only the whole sample. The aspects of preservation of nature (p=0.054) and motorboats (p=0.051) are just below the significance level. It is thus chosen to also use these two aspects like the other significant aspects, in order to describe every group apart.

In the outcome table (Figure 32) some of these aspects are abbreviated as followed: water sports = sports; ferry service = ferry; preservation of nature = nature; protection of biodiversity = biodiversity; cultural events = culture; job opportunities = jobs; renewable energies = ren. energies.

Means of travel * future nature Crosstabulation

			future nature			
			reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	5	21	90	116
		% within Means of travel	4,3%	18,1%	77,6%	100,0%
	Private sailing boat	Count	6	19	56	81
		% within Means of travel	7,4%	23,5%	69,1%	100,0%
	Private motorboat	Count	0	5	14	19
		% within Means of travel	,0%	26,3%	73,7%	100,0%
	Canoe, kayak, etc.	Count	0	2	3	5
		% within Means of travel	,0%	40,0%	60,0%	100,0%
Total		Count	11	47	163	221
		% within Means of travel	5,0%	21,3%	73,8%	100,0%

Means of travel * future biodiversity Crosstabulation

			future biodiversity				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	1	4	32	80	117
		% within Means of travel	,9%	3,4%	27,4%	68,4%	100,0%
	Private sailing boat	Count	1	8	17	54	80
		% within Means of travel	1,3%	10,0%	21,3%	67,5%	100,0%
	Private motorboat	Count	0	0	5	14	19
		% within Means of travel	,0%	,0%	26,3%	73,7%	100,0%
	Canoe, kayak, etc.	Count	0	0	1	4	5
		% within Means of travel	,0%	,0%	20,0%	80,0%	100,0%
Total		Count	2	12	55	152	221
		% within Means of travel	,9%	5,4%	24,9%	68,8%	100,0%

Means of travel * future sports Crosstabulation

			future sports				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	27	31	33	3	94
		% within Means of travel	28,7%	33,0%	35,1%	3,2%	100,0%
	Private sailing boat	Count	6	14	30	24	74
		% within Means of travel	8,1%	18,9%	40,5%	32,4%	100,0%
	Private motorboat	Count	3	5	7	4	19
		% within Means of travel	15,8%	26,3%	36,8%	21,1%	100,0%
	Canoe, kayak, etc.	Count	0	0	6	1	7
		% within Means of travel	,0%	,0%	85,7%	14,3%	100,0%
Total		Count	36	50	76	32	194
		% within Means of travel	18,6%	25,8%	39,2%	16,5%	100,0%

Means of travel * future culture Crosstabulation

			future culture				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	22	29	27	12	90
		% within Means of travel	24,4%	32,2%	30,0%	13,3%	100,0%
	Private sailing boat	Count	21	17	25	5	68
		% within Means of travel	30,9%	25,0%	36,8%	7,4%	100,0%
	Private motorboat	Count	5	7	4	1	17
		% within Means of travel	29,4%	41,2%	23,5%	5,9%	100,0%
	Canoe, kayak, etc.	Count	3	0	3	0	6
		% within Means of travel	50,0%	,0%	50,0%	,0%	100,0%
Total		Count	51	53	59	18	181
		% within Means of travel	28,2%	29,3%	32,6%	9,9%	100,0%

Means of travel * future tourism Crosstabulation

			future tourism				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	16	39	34	9	98
		% within Means of travel	16,3%	39,8%	34,7%	9,2%	100,0%
	Private sailing boat	Count	24	27	15	0	66
		% within Means of travel	36,4%	40,9%	22,7%	,0%	100,0%
	Private motorboat	Count	5	10	3	0	18
		% within Means of travel	27,8%	55,6%	16,7%	,0%	100,0%
	Canoe, kayak, etc.	Count	0	2	3	0	5
		% within Means of travel	,0%	40,0%	60,0%	,0%	100,0%
Total		Count	45	78	55	9	187
		% within Means of travel	24,1%	41,7%	29,4%	4,8%	100,0%

Means of travel * future ferry Crosstabulation

			future ferry				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	3	34	43	18	98
		% within Means of travel	3,1%	34,7%	43,9%	18,4%	100,0%
	Private sailing boat	Count	25	24	16	1	66
		% within Means of travel	37,9%	36,4%	24,2%	1,5%	100,0%
	Private motorboat	Count	2	6	7	2	17
		% within Means of travel	11,8%	35,3%	41,2%	11,8%	100,0%
	Canoe, kayak, etc.	Count	4	1	2	0	7
		% within Means of travel	57,1%	14,3%	28,6%	,0%	100,0%
Total		Count	34	65	68	21	188
		% within Means of travel	18,1%	34,6%	36,2%	11,2%	100,0%

Means of travel * future sailing Crosstabulation

			future sailing				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	12	20	48	12	92
		% within Means of travel	13,0%	21,7%	52,2%	13,0%	100,0%
	Private sailing boat	Count	1	6	26	44	77
		% within Means of travel	1,3%	7,8%	33,8%	57,1%	100,0%
	Private motorboat	Count	2	3	8	5	18
		% within Means of travel	11,1%	16,7%	44,4%	27,8%	100,0%
	Canoe, kayak, etc.	Count	0	0	2	3	5
		% within Means of travel	,0%	,0%	40,0%	60,0%	100,0%
Total		Count	15	29	84	64	192
		% within Means of travel	7,8%	15,1%	43,8%	33,3%	100,0%

Means of travel * future motorboat Crosstabulation

			future motorboat				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	36	35	14	4	89
		% within Means of travel	40,4%	39,3%	15,7%	4,5%	100,0%
	Private sailing boat	Count	18	27	10	7	62
		% within Means of travel	29,0%	43,5%	16,1%	11,3%	100,0%
	Private motorboat	Count	3	8	3	4	18
		% within Means of travel	16,7%	44,4%	16,7%	22,2%	100,0%
	Canoe, kayak, etc.	Count	4	2	0	1	7
		% within Means of travel	57,1%	28,6%	,0%	14,3%	100,0%
Total		Count	61	72	27	16	176
		% within Means of travel	34,7%	40,9%	15,3%	9,1%	100,0%

Means of travel * future fishing Crosstabulation

			future fishing				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	15	37	26	8	86
		% within Means of travel	17,4%	43,0%	30,2%	9,3%	100,0%
	Private sailing boat	Count	11	20	18	11	60
		% within Means of travel	18,3%	33,3%	30,0%	18,3%	100,0%
	Private motorboat	Count	4	5	7	1	17
		% within Means of travel	23,5%	29,4%	41,2%	5,9%	100,0%
	Canoe, kayak, etc.	Count	3	0	2	3	8
		% within Means of travel	37,5%	,0%	25,0%	37,5%	100,0%
Total		Count	33	62	53	23	171
		% within Means of travel	19,3%	36,3%	31,0%	13,5%	100,0%

Means of travel * future job Crosstabulation

			future job				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	13	29	24	13	79
		% within Means of travel	16,5%	36,7%	30,4%	16,5%	100,0%
	Private sailing boat	Count	10	11	29	8	58
		% within Means of travel	17,2%	19,0%	50,0%	13,8%	100,0%
	Private motorboat	Count	4	3	6	1	14
		% within Means of travel	28,6%	21,4%	42,9%	7,1%	100,0%
	Canoe, kayak, etc.	Count	1	1	2	2	6
		% within Means of travel	16,7%	16,7%	33,3%	33,3%	100,0%
Total		Count	28	44	61	24	157
		% within Means of travel	17,8%	28,0%	38,9%	15,3%	100,0%

Means of travel * future ren. Energy Crosstabulation

			future ren. Energy				
			reduce heavily/ not allow	reduce a bit	promote a bit	promote heavily	Total
Means of travel	Ferry	Count	21	13	26	31	91
		% within Means of travel	23,1%	14,3%	28,6%	34,1%	100,0%
	Private sailing boat	Count	15	8	21	25	69
		% within Means of travel	21,7%	11,6%	30,4%	36,2%	100,0%
	Private motorboat	Count	1	0	4	10	15
		% within Means of travel	6,7%	,0%	26,7%	66,7%	100,0%
	Canoe, kayak, etc.	Count	2	1	2	3	8
		% within Means of travel	25,0%	12,5%	25,0%	37,5%	100,0%
Total		Count	39	22	53	69	183
		% within Means of travel	21,3%	12,0%	29,0%	37,7%	100,0%

Figure 32: Means of travel & rating of different aspects in regard to future development

	Means of travel	N	Mean Rank
future nature	Ferry	121	124,19
	Private sailing boat	86	112,94
	Private motorboat	20	120,43
	Canoe, kayak, etc.	8	72,81
	Total	235	
future biodiversity	Ferry	121	121,38
	Private sailing boat	86	114,02
	Private motorboat	20	126,03
	Canoe, kayak, etc.	8	89,56
	Total	235	
future sports	Ferry	121	94,80
	Private sailing boat	86	142,76
	Private motorboat	20	137,43
	Canoe, kayak, etc.	8	154,19
	Total	235	
future culture	Ferry	121	117,64
	Private sailing boat	86	119,20
	Private motorboat	20	119,25
	Canoe, kayak, etc.	8	107,38
	Total	235	
future tourism	Ferry	121	129,85
	Private sailing boat	86	101,82
	Private motorboat	20	116,30
	Canoe, kayak, etc.	8	116,94
	Total	235	
future ferry	Ferry	121	135,81
	Private sailing boat	86	92,34
	Private motorboat	20	129,93
	Canoe, kayak, etc.	8	94,63
	Total	235	
future sailing	Ferry	121	93,95
	Private sailing boat	86	151,26
	Private motorboat	20	120,93
	Canoe, kayak, etc.	8	116,94
	Total	235	
future motorboat	Ferry	121	111,33
	Private sailing boat	86	118,81
	Private motorboat	20	155,50
	Canoe, kayak, etc.	8	116,31
	Total	235	
future fishing	Ferry	121	113,51
	Private sailing boat	86	117,65
	Private motorboat	20	129,50
	Canoe, kayak, etc.	8	160,88
	Total	235	
future job	Ferry	121	114,36
	Private sailing boat	86	121,88
	Private motorboat	20	115,10
	Canoe, kayak, etc.	8	138,63
	Total	235	
future ren. Energy	Ferry	121	111,66
	Private sailing boat	86	119,95
	Private motorboat	20	138,73
	Canoe, kayak, etc.	8	141,19
	Total	235	

Test Statistics(a,b)

	future nature	future biodiversity	future sports	future culture	future tourism	future ferry	future sailing	future motorboat	future fishing	future job	future ren. Energy
Chi-Square	7,658	3,174	31,100	,245	9,158	23,454	38,624	7,762	4,527	1,494	4,132
df	3	3	3	3	3	3	3	3	3	3	3
Asymp. Sig.	,054	,366	,000	,970	,027	,000	,000	,051	,210	,684	,248

a Kruskal Wallis Test
b Grouping Variable: Means of travel

Figure 33: Outcome of the Kruskal-Wallis-test with as input the data displayed in figure 8

Cognitive Dimension

In regard to the cognitive dimension, first, the different interpretations of sustainability were assessed. However, since the associated chi-square test is not valid (4 cells have expected count less than 5), Fisher's Exact Test is applicable. This test is also not significant, FX^2 (6) =4.939, p=0.604 (cf. Figure 34). Therefore the null hypothesis that the different groups of visitors have the same interpretations and knowledge about the concept of sustainability is retained.

Crosstab

			Interpretation of Sustainability			
			No idea	Yes, but cannot explain it	Yes, is able to explain it	Total
Means of travel	Ferry	Count	46	53	22	121
		% within group	38,0%	43,8%	18,2%	100,0%
	Private sailing boat	Count	26	39	21	86
		% within group	30,2%	45,3%	24,4%	100,0%
	Private motorboat	Count	6	11	3	20
		% within group	30,0%	55,0%	15,0%	100,0%
	Canoe, kayak, etc.	Count	1	6	1	8
		% within group	12,5%	75,0%	12,5%	100,0%
Total		Count	79	109	47	235
		% within group	33,6%	46,4%	20,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,570[a]	6	,473	,515[b]	,451	,579
Likelihood Ratio	5,664	6	,462	,528[b]	,464	,591
Fisher's Exact Test	4,939			,604[b]	,542	,667
Linear-by-Linear Association	1,201[c]	1	,273	,311[b]	,251	,370
N of Valid Cases	235					

A: 4 cells (33,3%) have expected count less than 5. The minimum expected count is 1,60.
B: Based on 235 sampled tables with starting seed 79996689.
C: The standardized statistic is 1,096.

Figure 34: Means of travel & Interpretation of sustainability - Cross tabulation and associated chi-square test

The second test of this dimension dealt with the different beliefes in nature. However, since the associated chi-square test is not valid either (6 cells have expected count less than 5), Fisher's Exact Test is applicable. This test is also not significant, FX^2 (9) =13.915, p= 0.077 (cf. Figure 35). Therefore the null hypothesis that the different groups of visitors have the same belief about nature and its processes is retained.

Crosstab

			Belief of nature				
			fragile	fragile/ dynamic	fragile/ in balance	resilient	Total
Means of travel	Ferry	Count	18	85	8	10	121
		% within group	14,9%	70,2%	6,6%	8,3%	100,0%
	Private sailing boat	Count	19	48	14	5	86
		% within group	22,1%	55,8%	16,3%	5,8%	100,0%
	Private motorboat	Count	4	11	2	3	20
		% within group	20,0%	55,0%	10,0%	15,0%	100,0%
	Canoe, kayak, etc.	Count	1	4	3	0	8
		% within group	12,5%	50,0%	37,5%	,0%	100,0%
Total		Count	42	148	27	18	235
		% within group	17,9%	63,0%	11,5%	7,7%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	15,210[a]	9	,085	,081[b]	,046	,116
Likelihood Ratio	14,037	9	,121	,153[b]	,107	,199
Fisher's Exact Test	13,915			,077[b]	,043	,111
Linear-by-Linear Association	,370[c]	1	,543	,498[b]	,434	,562
N of Valid Cases	235					

A 6 cells (37,5%) have expected count less than 5. The minimum expected count is ,61.
B Based on 235 sampled tables with starting seed 79996689.
C The standardized statistic is ,608.

Figure 35: Means of travel & Belief of nature - Cross tabulation and associated chi-square test

The third test analyzed the different definitions of nature. Although the resulting chi-square test is invalid, because 8 cells have expected count less than 5, the Fisher's Exact Test displays that a significant difference exist between the definition of nature between the different groups of visitors, FX^2 (12)=23.163, p=0.013 (cf. Figure 36). Therefore, the null hypothesis that the different groups of visitors have a similar definition of nature can be rejected.

Crosstab

			Definition of nature					
			very narrow	narrow	average	broad	very broad	Total
Means of visit	Ferry	Count	9	39	31	25	17	121
		% within group	7,4%	32,2%	25,6%	20,7%	14,0%	100,0%
	Private sailing boat	Count	3	32	25	16	10	86
		% within group	3,5%	37,2%	29,1%	18,6%	11,6%	100,0%
	Private motorboat	Count	2	3	1	5	9	20
		% within group	10,0%	15,0%	5,0%	25,0%	45,0%	100,0%
	Canoe, kayak, etc.	Count	0	1	2	1	4	8
		% within group	,0%	12,5%	25,0%	12,5%	50,0%	100,0%
Total		Count	14	75	59	47	40	235
		% within group	6,0%	31,9%	25,1%	20,0%	17,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	26,611[a]	12	,009	,017[b]	,000	,034
Likelihood Ratio	24,962	12	,015	,017[b]	,000	,034
Fisher's Exact Test	23,163			,013[b]	,000	,027
Linear-by-Linear Association	7,335[c]	1	,007	,004[b]	,000	,013
N of Valid Cases	235					

A 8 cells (40,0%) have expected count less than 5. The minimum expected count is ,48.
B Based on 235 sampled tables with starting seed 79996689.
C The standardized statistic is 2,708.

Figure 36: Means of travel & definition of nature - Cross tabulation and associated chi-square test.

The last step of the analysis of this dimension looked at the willingness to get involved. Although the resulting chi-square test is invalid, because 4 cells have expected count less than 5, the Fisher's Exact

Crosstab

			Get involved			
			No	Yes	Already involved	Total
Means of travel	Ferry	Count	88	29	4	121
		% within groups	72,7%	24,0%	3,3%	100,0%
	Private sailing boat	Count	50	19	17	86
		% within groups	58,1%	22,1%	19,8%	100,0%
	Private motorboat	Count	11	5	4	20
		% within groups	55,0%	25,0%	20,0%	100,0%
	Canoe, kayak, etc.	Count	6	2	0	8
		% within groups	75,0%	25,0%	,0%	100,0%
Total		Count	155	55	25	235
		% within groups	66,0%	23,4%	10,6%	100,0%

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					95% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	17,562[a]	6	,007	,017[b]	,000	,034
Likelihood Ratio	19,001	6	,004	,004[b]	,000	,013
Fisher's Exact Test	17,652			,004[b]	,000	,013
Linear-by-Linear Association	4,919[c]	1	,027	,021[b]	,003	,040
N of Valid Cases	235					

A 4 cells (33,3%) have expected count less than 5. The minimum expected count is ,85.
B Based on 235 sampled tables with starting seed 79996689.
C The standardized statistic is 2,218.

Figure 37: Means of travel & willingness to get involved - Cross tabulation and associated chi-square test

Test displays that a significant difference exist between the willingness to get involved between the different groups of visitors, FX^2 (6)=17.652, p=0.004 (cf. Figure 37). Therefore, the null hypothesis, that the different groups of visitors are to a similar degree willing to get involved in the development process of the Lotseninsel, can be rejected.

Expressive Dimension

The statistical analysis of the expressive dimension first looked at the form of nature that is more appealing to the different groups. The resulting chi-square test is invalid since 2 cells have expected counts less than 5. Therefore, Fisher's Exact Test is used, which displays that there is no significant difference between the means of travel and the form of nature that is more appealing, FX^2 (3) =0.890, p= 0.834 (cf. Figure 38). The null hypothesis, that the different groups of visitors find a similar form of nature appealing, is thus retained.

Means of travel * Appealing nature Crosstabulation

			Appealing nature		
			organized	wild	Total
Means of travel	Ferry	Count	27	94	121
		% within group	22,3%	77,7%	100,0%
	Private sailing boat	Count	15	71	86
		% within group	17,4%	82,6%	100,0%
	Private motorboat	Count	4	16	20
		% within group	20,0%	80,0%	100,0%
	Canoe, kayak, etc.	Count	1	7	8
		% within group	12,5%	87,5%	100,0%
Total		Count	47	188	235
		% within group	20,0%	80,0%	100,0%

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					95% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	1,038[a]	3	,792	,766[b]	,712	,820
Likelihood Ratio	1,072	3	,784	,766[b]	,712	,820
Fisher's Exact Test	,890			,834[b]	,786	,882
Linear-by-Linear Association	,700[c]	1	,403	,434[b]	,371	,497
N of Valid Cases	235					

A 2 cells (25,0%) have expected count less than 5. The minimum expected count is 1,60.
B Based on 235 sampled tables with starting seed 263739791.
C The standardized statistic is ,837.

Figure 38: Means of travel & form of nature that is more appealing - Cross tabulation and associated chi-square test

Lastly, the difference in frequency of visit between the different groups was assessed. The resulting chi-square test displays that there is a significant difference, X^2 (9) =125.965, p=0.0001 (cf. Figure 39). The null hypothesis, that the frequency of visit between the different groups of visitors is similar, is thus rejected.

Crosstab

			Frequency of visit				
			First time	once every couple of years	one time per year	more often	Total
Means of travel	Ferry	Count	105	9	2	5	121
		% within Means of travel	86,8%	7,4%	1,7%	4,1%	100,0%
	Private sailing boat	Count	12	6	13	55	86
		% within Means of travel	14,0%	7,0%	15,1%	64,0%	100,0%
	Private motorboat	Count	6	2	2	10	20
		% within Means of travel	30,0%	10,0%	10,0%	50,0%	100,0%
	Canoe, kayak, etc.	Count	5	0	1	2	8
		% within Means of travel	62,5%	,0%	12,5%	25,0%	100,0%
Total		Count	128	17	18	72	235
		% within Means of travel	54,5%	7,2%	7,7%	30,6%	100,0%

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					95% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	125,965[a]	9	,000	,000[b]	,000	,013
Likelihood Ratio	144,181	9	,000	,000[b]	,000	,013
Fisher's Exact Test	141,399			,000[b]	,000	,013
Linear-by-Linear Association	56,405[c]	1	,000	,000[b]	,000	,013
N of Valid Cases	235					

Figure 39: Means of travel & frequency of visit - cross tabulation and associated chi-square test

V. 'Images of nature' based on statistical results of surveys

Based on these results of the statistical analysis, the following findings can be made.

The Lotseninsel attracts many visitors who come here in a variety of ways. Since no exact census of visitors is carried out yet, it is estimated that each year up to 15.000 people come with *ferries*, another 8.500 travel with *private sailing boats*, 1.500 visitors arrive with *private motorboats* and 600 guests come with *canoes, kayaks,* etc. The survey sampled 235 visitors and is subdivided in visitors who come with *ferries* (N= 121), with *private sailing boats* (N=86), with *private motorboats* (N=20), or with *canoes, kayaks, etc*. (N=8). The statistical analysis reveals that this observed frequency represents the above described estimated frequency distribution (cf. Appendix IV, Figure 21).

a. Normative dimension

Statistical analysis of the questions that focus on the normative dimension of 'images of nature' reveals that the reasons to visit the Lotseninsel differ among the different groups of visitors (cf. Appendix IV, Figure 22 & Figure 23). It can be said that 47% of visitors who arrive with *ferry* significantly value ecocentric aspects (such as remoteness, peace, and nature), while 43.4% also value aesthetic aspects (like the beauty and view). In contrast, sport, culture, social contacts, and other utilitarian aspects barely matter as reason for this group to visit the Lotseninsel (9.6%). However, such utilitarian reasons are more represented in the other three groups (≈30%). Nevertheless, the significantly most important reason for these groups is also ecocentric in nature (≈40%). However, people who arrive with their *motorboat* also strongly value aesthetic aspects of the Lotseninsel (34.4%). Therefore, the preference for ecocentric aspects (37.5%) is, just like in the group of people who arrive with ferries, not as distinct as in the groups of people who arrive with sailing boats and canoes. If the answers of the whole of the population are analyzed, it can be said that the majority (43.1%) regard ecocentric aspects as reason to visit the Lotseninsel.

Regarding perceived negative aspects, it can be said, that 53.5% of the whole sample are pleased and do not state any negative aspects. However, also 31.3% state negative aspects that are in conflict with ecocentric values, such as pollution and especially rush of people. In the group of people who come with the *ferry* even 60% have no negative remarks. In the group of *sailors* this percentage is with 48.3% lower. Instead, many negative remarks (41.4%) are given about aspects that stand in contrast with the ecocentric values. In the group of people who arrive with *motorboats* the percentage of satisfied visitors is again lower (40.9%). In contrast, the percentage of negative remarks about aspects that stand in contrast with ecocentric values is close behind this category (36.4%). The data from people who travel with *canoe* cannot be analyzed in this respect since there are not enough remarks (cf. Appendix IV, Figure 24 & Figure 25).

Regarding the ideas of management, it can be said that the group of visitors who arrive with ferries rates a hands-off management higher than a management that always intervenes in nature, a management that focuses on beauty and aesthetic aspects and a management that uses nature in a productive sense. In regard to the form of management that focuses on the health of animals, the ratings do not significantly differ. In turn, the 'animal management' is preferred to an 'intervention management' and 'beauty management'. However, concerning a productive management, this form of management does not show significant differences in ratings. Therefore, it is assumed that a hands-off management is the most preferred form of management of visitors who travel with ferries.

The group who arrives with sailing boats rates a hand-off and an animal approach higher than an 'intervention' and 'beauty management'. However, in this group differences in ratings are less significant, especially in regard to a productive management. Additionally, a significant difference between a hands-off and an animal management cannot be detected. Therefore, it is assumed that this group prefers both forms of management.

In regard to the group of people who come with motorboats even less significant differences are detected between the forms of management. Therefore, it can only be said that this group prefers an animal management to a management that focuses on beauty and to a management that always intervenes.

The group of canoeists does not show significant differences in the ratings of the ideas of management at all (cf. Appendix IV, Figure 26 to Figure 31).

Conclusion

Based on this information, it can be concluded that the people who arrive with ferries and with motorboats attach partly ecocentric, partly weak anthropocentric values to the Lotseninsel, while sailors and canoeists have rather ecocentric values. In regard to the whole sample, it can be said that all visitors combined attach ecocentric values to the Lotseninsel. These conclusions are mainly based on the reason to come to the Lotseninsel, since this result is most reliable.

b. Vision of future development

In regard to the vision of future development, preservation of nature is the most important aspect because 21.3% of the whole sample wants to promote this aspect a bit and even 73.8% want to promote it heavily. There is nobody who wants to 'heavily reduce' this aspect. However, there are no significant differences in ratings between the groups.

Protection of biodiversity is the second most important aspect. Here, 24.9% of the whole sample wants to promote this aspect a bit and 68.8% wants to promote it heavily. However, this aspect also does not display significant differences in ratings between the groups.

Concerning the water sport aspect, which shows a significant difference in ratings, it can be concluded that people who travel with a *sailing boat* (72.9%), with a *canoe* (100%), or with a *motorboat* (57.9%) want to promote this aspect a bit or heavily, while people who arrive with *ferries* would reduce it a bit or heavily(61.7%). Therefore, if the whole sample is used, it seems that the result is rather indifferent because 55.7% would promote it and 44.3% not. [5]

In regard to cultural events no significant difference in ratings could be detected. However, it can be said, that a weak tendency exists to reduce this aspect, since 29.3% of the whole population would reduce this aspect a bit and 28.2% would reduce it heavily, while only 9.9% would heavily promote this aspect.

[5] These numbers are calculated by summing up the two columns 'promote a bit' and 'promote heavily' (cf. Appendix IV, Figure 32 & Figure 33)

In regard to the aspect of tourism, the outcome shows a significant difference in ratings. More people who arrive privately with sailing and motorboats want rather (heavily) reduce this aspect (77.3% & 83.4%). In contrast, people who travel with ferries are indifferent because 56.1% would reduce it, while the remaining visitors would promote it. Only the people who arrive with canoes, kayaks, etc. want to promote tourism (60%). [6]

The aspect of ferry service also shows a significant difference in ratings between the groups. The aspect should be reduced in the eyes of *sailors* (74.3%) and *canoeists* (71.4%), while people who come with *ferries* would promote this aspect (62.3%). The opinion of the group of people who travel with motorboats is indifferent in this regard, because nearly the same percentage would reduce or promote this aspect. The same result is found if the rating of the whole sample is analyzed.

The aspect of sailing is promoted by every group, but on different scale. While 65.2% of people who arrive with *ferries* would (heavily) promote this aspect, the percentage of supporters increases in the other groups (*motorboat*=72.2%; *sailing boat*= 90.9%, and *canoe*=100%). In total, 77.1% of the whole population therefore would promote this aspect[6].

Furthermore, regarding the aspect of motorboats, 40.9% of the whole sample would reduce this aspect a bit and 34.7% would reduce it heavily. Even if there is nearly no significant difference between the groups, it seems that visitors who arrive with motorboats have a slightly different opinion than the other groups. This becomes evident, because the percentage of people who want to 'heavily reduce' this aspect is much lower (16.7%) than in the other groups (29 – 57.1%). In addition, the percentage of people who want to 'heavily promote' it, is much higher in this group. Nevertheless, it can be said that every group wants to reduce this aspect.

In respect to the aspects of job opportunities and fishing there is no significant difference in ratings. Furthermore, the results are indifferent, because the answers display that round 50% of the whole population would promote these aspects and round 50% would reduce them.

Lastly, renewable energies are also regarded as quite important by the sample. A significant difference in ratings could not be found, but it can be concluded that 29% of the whole sample would promote this aspect a bit and even 37.7% would heavily promote it.

Conclusion

Summarizing, it can be said that the vision of future development of every group of tourists is based on ecocentric standpoints, since preservation of nature, protection of biodiversity and renewable energies are the three aspects which are rated highest by the whole population. However, it becomes also apparent that the different groups want to promote aspects that are beneficial to them, while reducing aspects they do not rely on. Especially for the group of *sailors* this behavior becomes apparent, since they would promote water sports and sailing, while reducing tourism and ferry service. In contrast, people who arrive with ferries want to promote exactly these two aspects. Therefore, it can be said that every group also has a utilitarian standpoint in regard to the vision of future development.

[6] These numbers are calculated by summing up the two columns 'promote a bit' and 'promote heavily' (cf. Appendix IV, Figure 32 & Figure 33 (same footnote)

c. Cognitive dimension

Concerning the questions about the cognitive dimension of 'images of nature', it becomes apparent that there is no significant difference between the different groups of visitors and the interpretation of sustainability respectively the belief about nature and its processes (see appendix IV, Figure 34 & Figure 35). It is striking that in respect to the concept of sustainability only 20% of the whole sample can give an explanation. The remaining participants never heard of sustainability (33.6%) or do not know what it means exactly (46.4%). However, if the concept is known, the interpretations differ strongly. Within the 20%, the most common interpretation of sustainability is the conservation and responsible use of resources (37.21%), followed by the protection of nature (27.91%). Other interpretations of sustainability are intergenerational equity (13.95%), the use of renewable resources (11.63%) and the balancing of people, planet and profit (9.3%).

In conjunction with this result about the knowledge of sustainability, it is important to state that many visitors of several groups also do not understand the ideas behind some measures which are currently carried out on the Lotseninsel. This lack of information was often expressed during conversations and in the open question of survey (question 15).

In regard to the belief visitors hold about nature, it can be concluded that the majority (63%) beliefs that nature is fragile and dynamic. That means that nature can only recover slowly from an intervention and will have a different form afterwards. This belief is also connected with the (partly) ecocentric standpoints of the groups in the normative dimension as well as the vision of future development, because nature protection is promoted since interventions are regarded as disturbing.

In contrast, the definition of boundaries of nature significantly depends on the means of travel, just like the willingness to get involved (cf. Appendix IV, Figure 36 & Figure 37). The analysis shows that most of the people (32.2%) who arrive with *ferry* have a narrow definition of nature, just like people who travel with a *private sailing boat* (37.2%). This means that only two out five categories are regarded as nature. Most often elements and spontaneous nature are defined as nature. On the other hand, people who come with a *motorboat* or with a *canoe, kayak, etc*. have a very broad definition of nature (45% and 50%), because all five categories (elements, spontaneous nature, productive nature, designed nature, domesticated nature) are regarded as nature. In regard to the whole sample, it can be said that with 31.9% most people have a narrow definition of nature.

In regard to the willingness to get involved, it is striking that 66% of the whole population does not want to get involved in the development of the Lotseninsel. Furthermore, within every group at least 50% does not want to get involved. In the group of people who come with *ferry* or *canoe* this percentage even exceeds 70%. In contrast, in the groups of people who travel with *sailing*- or *motorboat* up to 20% are already involved and up to 25% want to get involved in the development of the Lotseninsel. In regard to the whole population, only 10.6% are already involved.

d. Expressive dimension

In regard to the expressive dimension of 'images of nature' it can be concluded that 80% of the total population prefers wild nature (cf. Appendix IV, Figure 38). Furthermore, several answers are given about aspects of the Lotseninsel that are particularly important to the different groups. However, these answers are mainly given by people who arrive with *sailing* boats. The reasons for personal importance are very divers and no consensus can be found. The most common aspects which are subject of their personal importance are the restaurant *Giftbude* and the harbor, as well as the

special ambience and the naturalness. Furthermore, many visitors also want the Lotseninsel to remain as it is and want to ensure accessibility. Many of these people of come with sailing boats and attach a personal importance are also involved in the development process. In contrast, the other groups are barely involved. This can interrelate with the fact that 86.8% of the people who come for example with ferries, visit the Lotseninsel for the first time, while nearly 80 % of the sailors come to the Lotseninsel at least one time per year (cf. Appendix IV, Figure 39).

e.'Image of nature'

Based on this information, it can be concluded that the 'images of nature' of the visitors who come with different means of travel to the Lotseninsel differ only slightly and in few details from each other. Furthermore, it is difficult to assign a distinct 'image of nature', since the outcome of the survey gives a rather broad image for each group and since some categories are not significant. However, it can be said that people who travel with *private sailing boats* have a rather weak wilderness 'image of nature', just like people who come with a *canoe, kayak,* etc. People who come with a *private motorboat* have a rather weak utilitarian 'image of nature', just like people who arrive with *ferries* on the Lotseninsel. These conclusions are mainly based on the significant results of the normative and cognitive dimension.

VI. 'Images of nature' based on interviews

Lighthouse Foundation

The *Lighthouse Foundation* is, as already mentioned, the owner of the Lotseninsel and thus in charge of the management. The Lotseninsel is, on the one hand, special for this organization due its remote location directly in the naturalness of the transition area of Baltic Sea and Schlei. On the other hand, the island is interesting because it has potential to become a good example for sustainable development, since "many interests and different aspects of people, planet, and profit come together here" (Ambsdorf, 2012). In order to implement this potential, their idea of management for the Lotseninsel focuses on nature, because only basic requirements should be provided on which the nature can take its own course. Apart from that, massive interventions should be avoided. The only aspects that are regarded as negative on the Lotseninsel are the temporarily overcrowding in the summer months and the lack of good cooperation between the actors. Based on this information, it is evident that this stakeholder attaches ecocentric values to the Lotseninsel in respect to the normative dimension of 'images of nature'.

According to the *Lighthouse Foundation*, the current infrastructure of the Lotseninsel works well (with exception of the gastronomy). The next step is now the enhancement of cooperation with the different actors in order to harmonize the different interests. In addition, education for sustainable development should be encouraged on the Lotseninsel. New possibilities of usage, like the renting of the Lotsenhaus for groups and clubs, need to be promoted as well. However, it is underlined that overcrowding and overexploitation must be prevented. Concerning the vision of future development, it can thus be said, that the *Lighthouse Foundation* has a partly ecocentric partly utilitarian standpoint.

In regard to the cognitive dimension, the Lighthouse Foundation interprets sustainability as a process ("sustainability should better be called sustainable development"; Ambsdorf, 2012) that balances environmental, economic and social considerations. Additionally, the organization holds the belief that interventions in nature are irreversible and will change the form of nature, due to the fact that nature is fragile and dynamic. The organization has also a narrow definition of nature (elements & spontaneous nature are regarded as nature). In addition, in the eyes of the organization, actors have many opportunities to get involved in the development process, but many of them "do not use this chance" (Ambsdorf, 2012).

Regarding the expressive dimension, the *Lighthouse Foundation* states that wild nature is more appealing. This preference can also be found in their idea of management and the normative dimension. Furthermore, it is obvious that the Lotseninsel as a whole is important to the *Lighthouse Foundation*. However, the organization also knows and acknowledges that this area is also important for many other stakeholders.

Based on all these information, it can be concluded that the *Lighthouse Foundation* has a weak wilderness 'image of nature'.

Verein Jordsand

The conservation organization *Verein Jordsand* advocates the coast- and seabird conservation in the North- and Baltic Sea (Verein Jordsand, 2012). It was also the initiator of the nature reserve "Naturschutzgebiet Schleimündung" since this whole area is an important habitat for seabirds. This natural importance makes also the Lotseninsel an interesting place for *Verein Jordsand*. From here, the organization manages the nature reserve and carries out monitoring programs of the avifauna. Additionally, tours are offered from the Lotseninsel into the nature reserve. *Verein Jordsand* is the only actor who is allowed to enter the nature reserve. The tours are conducted by volunteers who live in the Lotsenhaus. At the moment, there is only one volunteer on the Lotseninsel.

According to the interviewee Thorsten Harder, the manager of *Verein Jordsand*, there is no comparable place on the Baltic Sea coast where nature and humans coexist that close to each other. Nevertheless, the protection of the nature and especially the seabirds has highest priority for the organization. Therefore, *Verein Jordsand* supports a management that holds the status quo of the area and protects the seabird community. In order to achieve this and to prevent overcrowding, a maximum limit for visitors of the Lotseninsel must be established. Since the organization especially focuses on the seabird community it can be concluded that it attaches biocentric values to the Lotseninsel in regard to the normative dimension of 'images of nature'.

The recent development of the Lotseninsel is regarded as positive and no negative remarks are stated. According to the interviewee it is „much better than in the past"(Harder, 2012). However, in the future, the cooperation between the most important actors (that are in the eyes of the interviewee the Lighthouse Foundation, *Verein Jordsand, Giftbude*, the shipping companies, and the harbor) need to be improved. Furthermore, *Verein Jordsand* still misses a nature exhibition on the Lotseninsel. The organization itself is planning to build a route with viewing platform in the nature reserve. The way will be strongly fenced off, because an open way is regarded as dire for the nature reserve. It is evident that it is important for this organization that nature protection is also be guaranteed and promoted the future. The organization also wants to employ more volunteers on the Lotseninsel and is therefore against the possibility to rent the Lotsenhaus. This would only increase the rush on the Lotseninsel. *Verein Jordsand* is also against more buildings (e.g. souvenir shop/ kiosk) and moorings on the island, because it leads to overcrowding. All this information makes evident that this stakeholder has a rather ecocentric standpoint in regard to the vision of future development, since a development of tourism is rejected.

Concerning the cognitive dimension of 'images of nature', *Verein Jordsand* holds the belief that nature is fragile and has a narrow definition of nature (Elements and spontaneous nature are regarded as nature). Sustainable development is interpreted as intergenerational equity. That includes that humans live in accordance with nature and only use renewable resources. However, until now, *Verein Jordsand* feels insufficiently involved in the development process of the Lotseninsel and wishes a stronger participation.

The expressive dimension of 'images of nature' reflects the eco-/biocentric standpoint of the other dimensions, because the fact that the Lotseninsel is not visited in winter and the silence when the island is empty is regarded as very appealing and important. It is self-evident that wild nature is more attractive to this stakeholder. If all this information is taken into account, it can be concluded that this stakeholder has a wilderness image of nature.

Naturnaher Wasserwanderplatz Schleimünde e.V.

The organization *Naturnaher Wasserwanderplatz Schleimünde e.V.*, an association of local yachting clubs, is the leaseholder of the small sport boat harbor and is in charge of its maintenance. Therefore, the organization has much contact with visitors who arrive with private boats on the Lotseninsel. Furthermore, this stakeholder offers sailing and boating courses on the Lotseninsel, but only for its members. The interview was conducted with Günter Hoffmann, the chairman of this organization.

The Lotseninsel is interesting for this organization due to the fact, that it is only accessible with a ship. Furthermore, due to this remoteness, it becomes a starting point of trips to the Baltic Sea. Therefore, it is important to this stakeholder that the Lotseninsel remains open to the public at any rate. According to the interviewee, the management of the Lotseninsel should always ensure the accessibility and the use of the Lotseninsel. Furthermore, the number of visitors does not need to be managed, because it is automatically regulated by the capacity of the island. In general, the Lotseninsel should not change too much since it is good as it is. In addition, it is regarded as unnecessary to reduce any activities in the future. The implementation of more prohibitions by promoting conservation in the future is also not required. Instead, the cooperation and communication between the actors should be promoted. Since the use and the users of the Lotseninsel have priority, it can be said that in regard to the normative dimension of 'images of nature' and the vision of future development, this stakeholder attaches utilitarian values to the Lotseninsel.

According to the interviewee, many members of the organization appreciate the current situation and the work of the *Lighthouse Foundation*. However, many changes are also eyed with uncertainty and skepticism, because it is unclear what the result will be and what else will happen. They are concerned, that their freedom and rights on the Lotseninsel are curtailed. Additionally, it is also not clear what a sustainability development of the Lotseninsel comprises. Nevertheless, they do not feel cut out from the development, due to a good dialogue with the Lighthouse Foundation. In regard to the remaining aspects of the cognitive dimension of 'images of nature', the interview revealed, that this stakeholder holds the belief that nature is resilient and always adapts to new situations after interventions. The stakeholder also has a very broad definition of nature and regards every category as nature. This outcome backs up the utilitarian standpoint, because it justifies the use of the Lotseninsel.

Regarding the expressive dimension of 'images of nature', organized nature is more appealing to this stakeholder, since structure is a requirement for a good harbor. Additionally, the stakeholder feels connected with the restaurant *Giftbude* and wants to preserve it. Therefore, the outcome of this dimension also matches the result of the other dimensions: the use of the Lotseninsel for the visitors stands central. As conclusion it can thus be said that this stakeholder has a functional 'image of nature'.

Harbor Master

Harald Schacht is on the one hand the harbor master and on the other hand the caretaker of the Lotseninsel. His interest in the Lotseninsel is therefore mainly determined by his work. However, the

closeness to the sea and to nature as well as the seclusion makes the Lotseninsel an important and special place for him. Furthermore, he values the simple and imperfect ambience which offers a certain degree of freedom for humans while taking into account the importance of nature. In order to preserve this characteristic, the island should only be managed and regulated very slightly. He himself is integrated in the management and can give advice on certain decisions. This all makes evident that this stakeholder attaches partly weak-anthropocentric, partly ecocentric values to the Lotseninsel in regard to the normative dimension of 'images of nature'.

Until now, this stakeholder is pleased with the work of the Lighthouse Foundation and there is no aspect on the island he regards as negative. An exception is the gastronomy, which need to be improved in the future (this aspect was mentioned later in the course of the interview). However, apart from that he wants the island to remain as it currently is. According to him, "80% of the island should not be changed" (Schacht, 2012). The remaining 20% contain an improvement of the beach, possibilities to sit and other small aesthetic details. It is also important to him that the ambience and seclusion of the island is preserved and that crowds of people are not attracted. This all makes evident that he has a weak-anthropocentric standpoint in regard to the vision of future development.

In regard to the cognitive dimension, it can be said that this stakeholder holds the belief that nature is fragile, but also that humans are part of nature. Therefore, it is inevitable that humans use and manage nature. His interpretation of sustainability is thus the preservation of nature and human needs at the same time. Lastly, the stakeholder also has a broad definition of nature, since four out of five categories are regarded as nature.

Concerning the expressive dimension of 'images of nature' it can be said that the stakeholder feels connected with the Lotseninsel due to his work. Furthermore, wild nature is more appealing to him and he regards the ambience as personally important. This information connects with his view on the management of the Lotseninsel and his vision of future development. Therefore, in conclusion it can be said that this stakeholder has an aesthetic 'image of nature'.

Giftbude

The *Giftbude* is the only gastronomy on the Lotseninsel and offers work for three people. It only has a small range of meals and drinks due to the fact that everything has to be brought to the island by boat. Unfortunately, nobody of the *Giftbude* was available to give an interview. Therefore, this stakeholder is not included in the further analysis.

City of Kappeln

The Lotseninsel lies in the jurisdiction area of the city of Kappeln, which is thus the responsible authority for planning and building laws as well as conservation in that area. Therefore, the city of Kappeln is necessarily involved in the development of the Lotseninsel. In addition to that, the Lotseninsel is interesting for the city of Kappeln due to its position at the coast of the Baltic Sea. This makes the Lotseninsel important in regard to coastal protection of the whole area, but also in a touristic sense, since Kappeln is the starting point of tourist trips to the Lotseninsel. The preferred

form of management only focuses on the guarantee that visitors have access to the Lotseninsel. This all makes evident, that this stakeholder attaches utilitarian values to the Lotseninsel in regard to the normative dimension of 'images of nature'.

The city of Kappeln sees a touristic potential in the Lotseninsel and would thus like to increase or improve the touristic services on the Lotseninsel in the future. However, this development and management should not get out of control and change the image of the Lotseninsel of being a secluded place. Instead, visitors should have more possibilities to experience and understand nature. Additionally, the marketing must be improved, because the already existing services on the Lotseninsel are not quite clear to visitors and the city of Kappeln itself. In regard to the vision of future development the focus lies especially on tourism that includes nature conservation. Therefore, it can be said that the stakeholder has a partly utilitarian partly ecocentric standpoint in this regard.

Concerning, the cognitive dimension of 'images of nature', it can be said that the stakeholder has a very broad definition of nature, since five out of five categories are regarded as nature. In addition, nature is considered as being fragile, dynamic and unpredictable. However, interventions in nature can be justified if the impact is minimized. In addition, it is regarded as very important that nature is accessible for the public. This also reflects the interpretation of sustainability. According to the stakeholder it means that possibilities for the public are created to experience and understand nature.

Regarding the expressive dimension, any form of nature is appealing to the stakeholder as long as it is open to the public and embedded in the surrounding. This result as well as the outcome of the cognitive dimension and the vision of future development display that the stakeholder tries to combine nature and tourism. However, especially utilitarian values are attached to the Lotseninsel. Therefore, it can be said that this stakeholder as a weak functional 'image of nature'.

Municipality Maasholm

The municipality „Maasholm" is the closest neighbor of the Lotseninsel and the responsible authority for the nature reserve. However, the Lotseninsel itself is not in the jurisdiction of this stakeholder. The interview is conducted with the mayor of Maasholm, Kay-Uwe Andresen.

Since Maasholm is the closest neighbor of the Lotseninsel, changes on the Lotseninsel can also affect the municipality. Therefore, it is of special importance to the stakeholder, that coastal protection is taken into account in the development of the Lotseninsel. Additionally, since many visitors of Maasholm also come to the Lotseninsel, the island is regarded as a tourist destination. These aspects should also be taken into account in the future development. Based on this information, it can be said that this stakeholder has a utilitarian standpoint in regard to the normative dimension of 'images of nature and the vision of future development. However, the interviewee stresses that nature and tourism need to go hand in hand. The best way to achieve this is a "gentle, low-impact management" (Andresen, 2012).

The municipality is not included in the development of the Lotseninsel. Therefore, it does not have much information about the current situation on the Lotseninsel, but regards the work of the

Lighthouse Foundation as “preferable”. The idea of sustainability in respect to nature is also difficult to interpret for this stakeholder. Lastly, the stakeholder has a very broad definition of nature and regards all five categories as nature. Nature itself is seen as resilient and strong. This all corresponds with the utilitarian point of view. Concerning the expressive dimension of ‘images of nature’, the stakeholder states that wild nature is rather preferred than organized nature. However, there is nothing on the Lotseninsel the municipality Maasholm feels connected with. Therefore, in conclusion it can be said that this stakeholder has a functional ‘image of nature’, which is a little bit weakened by the fact that tourism and nature are not regarded as opposing forces.

Schlei Ausflugsfahrten

The shipping company *Schlei Ausflugsfahrten* offers daily tourist boat trips on the whole Schlei. As representative for this company the captain Juliane Sebode was interviewed. The company’s only ship *MS Stadt Kappeln* starts from Kappeln and drives to the Lotseninsel or to Schleswig. It also stops at other destinations along the Schlei. However, most trips head towards the Lotseninsel. In fact, the *MS Stadt Kappeln* lands five times per week, two times per day for half an hour on the Lotseninsel. This makes evident that the benefit of this company is closely connected with the Lotseninsel. The remote position of the Lotseninsel, only accessible via the water way, is thus also the most important characteristic of the Lotseninsel for the company, since it forms the company’s means of existence. In contrast, the only aspect that is not appealing to the company are the tourist facilities and in particular the sanitary facilities and the gastronomy, because in the past some customers were complaining about their conditions. It becomes evident that both aspects stand in connection with the work of the company. Therefore, this stakeholder attaches utilitarian values to the Lotseninsel in regard to the normative dimension of ‘images of nature’. However, this assumption is weakened since not an intense use of the Lotseninsel, but a middle course of management is advocated in order to preserve the Lotseninsel as an “inside tip” while preventing overcrowding (Sebode, 2012).

The current situation of the Lotseninsel is regarded as good as it is and therefore the interviewee first mentions that neither tourism nor natural aspects of the Lotseninsel should be promoted in the future. Nevertheless, in the course of the interview, it is underlined that the company would focus a little bit more on day visitors – their target group - in the future. According to the interviewee, the demand for souvenirs and a good gastronomy is high among day visitors. Therefore, it would be beneficial if a souvenir shop is established and the gastronomy improved. Based on this information, it can be said that a utilitarian standpoint is taken in regard to the vision of future development.

The company itself is not involved in the development of the Lotseninsel, but supports the Lighthouse Foundation in many respects (e.g. free trips during events on the Lotseninsel). In addition, even if the work of the *Lighthouse Foundation* is regarded as beneficial, some measures are not understood. The concept of sustainability and thus the mission of the Lighthouse Foundation are also not quite clear to the interviewee. Concerning the other aspects of the cognitive dimension of ‘images of nature’, the company has a broad definition. Four out of five different categories are defined as nature. Furthermore, the company holds the belief that human interventions can have a severe impact on nature, because of its fragility. However, nature is also seen as dynamic and can therefore recover and adapt to a new situation.

Concerning the expressive dimension of 'images of nature', wild and unorganized nature is more appealing to this company. This might explain why the company has a utilitarian standpoint and nevertheless does not want that tourism grows too much on the Lotseninsel. Lastly, the stakeholder connects a personal importance to the lighthouse of the island. In conclusion, it can be said that this stakeholder focuses on tourism and thus on work. Nevertheless, the stakeholder thinks that successful tourism relies on the naturalness, remoteness and beauty of the Lotseninsel. Therefore, this stakeholder has a weak functional 'image of nature'.

Reisedienst Gerda Müller GmbH & Co. KG

The *Reisedienst Gerda Müller GmbH & Co. KG* is the second shipping company which offers boat trips on the Schlei and to the Lotseninsel. The interview was conducted with several employees at the same time. The company goes with two ships (the paddle steamer *Schlei Princess* and the cruise vessel *Wikinger Princess*) five days per week to the Lotseninsel. On two days only one ship is anchoring there. The duration of the stay is half an hour. In addition, trips to other destinations along the Schlei are offered on a daily base. Therefore, the company is not as reliant on the Lotseninsel as the other shipping company.

Nevertheless, the Lotseninsel is interesting for the company, due to its remote position directly at the Baltic Sea and only accessible via the waterway. In addition to that it is stated that apart from the Lotseninsel, "there is nothing else in that part of the Schlei" (Müller, 2012). It becomes evident that these emphasized features are important to the company since they are beneficial for their work. Therefore, a management that promotes tourism is preferred. It can be concluded, that this stakeholder attaches utilitarian values to the Lotseninsel. This tendency of focusing on features that are beneficial for the work can also be found in the vision of future development. Although the interviewees do not state negative remarks about the current situation, they focus on the improvement of the landing pier and the promotion of services for visitors in the future (e.g. Souvenir shop, an exhibition or a "Schlei information centre"). According to the interviewees, many visitors do not know what to do on the Lotseninsel. Additionally, it is underlined that the gastronomy as well as the freshwater provision needs to be improved. The company sees a potential in the Lotseninsel to become something "very beautiful".

Concerning the cognitive dimension of 'images of nature', it can be said that the stakeholder has an average definition of nature. The categories "elements, spontaneous, and productive nature" are regarded as nature. Additionally, the stakeholder holds the belief that nature is fragile. This belief is thus also incorporated in the interpretation of sustainability. This concept is well known and promoted in the company and is interpreted as "gentle, low-impact tourism". This interpretation also focuses on tourism respectively the work. However, the stakeholder is not included in the development process.

In regard to the expressive dimension, both, wild and organized nature is appealing to the company, because the customers like to visit both. Since the opinion of the customer is taken into account in this regard, the stakeholder's work stands again central. Lastly, the company feels connected with the lighthouse on the island. Therefore, in conclusion it can be said that this stakeholder has a functional 'image of nature' with focus on tourism respectively work.

Kanuverband Schleswig-Holstein e.V.

The Lotseninsel forms an important place for local canoe- and kayak clubs. Many of these clubs together form the association *Landes-Kanuverband Schleswig-Holstein e.V*. Martin Ölscher is the interviewee for this stakeholder. He is member of the canoe club *Itzehoer Wasser-Wanderer e.V.* and in charge of the public relations of the association.

The remote position in the transition area of Baltic Sea and Schlei makes the Lotseninsel unique and very important in the eyes of canoe clubs. Therefore, the Lotseninsel is often the destination of excursions and the location for training camps. Additionally, it is used as resting and sleeping place for groups who are on a canoe trip. The possibility to be in close touch with nature, combined with the idyll and the "rustic and simple ambience" are the most important aspects of the Lotseninsel to this stakeholder (Ölscher, 2012). The management of the Lotseninsel should thus ensure accessibility, while only providing a minimum of infrastructure. In the future, opportunities for people to experience nature and to bring people and nature closer to each other should be created. However, it should be prevented that too many people come to the island. That way the closeness to nature and thus the ambience are also preserved in the future. The interviewee also states the idea, that a public fireplace should be created, if possible. This would also enhance the ambience of the Lotseninsel. Since the closeness to nature and the special ambience of the Lotseninsel are the most important aspects, it can be said that this stakeholder has a partly ecocentric partly weak anthropocentric point of view in regard to the normative dimension and the vision of future development.

Although the stakeholder is not included in the development of the Lotseninsel, the current developments are regarded as beneficial until now. The idea of sustainable development is also supported and is interpreted as long-term planning. However, other concepts such as "take back your trash" must also be included in order to raise awareness among visitors (Ölscher, 2012). It is important to this stakeholder that nature is open to public, but nevertheless nature is regarded as fragile and thus interventions must be taken with precaution. Concerning the definition of nature, it can be said that this stakeholder has a very broad definition. This is the only aspect of the cognitive dimension that underlines the weak-anthropocentric aspect of the normative dimension. In contrast, the other aspects are complying with the ecocentric standpoint, just like the expressive dimension, because wild and untouched nature is preferred. In conclusion it can thus be said that the stakeholder has a weak wilderness 'image of nature'.

Unmarked space e.V.

The *unmarked space e.V*. around Timoh Plath is the initiator and organizer of the open-air culture and art festival *unmarked_space* on the Lotseninsel. Artists from different countries and different art styles come every year for one week to this festival to jointly create and present ideas, artworks and projects. The philosophy behind this festival is that new ideas can be brought forward, due to a different environment. The festival takes place directly on the beach where theatre, exhibitions and concerts are presented. In this context socio-political, economical and ecological issues are approached. According to the interviewee, the Lotseninsel is the perfect place to carry out this

festival, because many of the thematized issues also occur here on a smaller scale. Therefore, the Lotseninsel and its "vast nature" is a place where problems "seem more real", which can thus be experienced and understood in a different light (Plath, 2012). This special ambience is created through the seclusion and beauty of the Lotseninsel and is highly valued. In contrast, there is nothing on the Lotseninsel that is really disliked. An exception might be the gastronomy on the island (this aspect was mentioned later in the course of the interview). The management is seen as "well on the way", but it is stressed that a middle course of management - which preserves some key parts, such as the naturalness and ambience, while leaves the rest open - is most beneficial (Plath, 2012). Therefore, it can be said that in regard to a normative dimension of 'images of nature' the *unmarked space e.V.* group attaches weak anthropocentric values to the Lotseninsel.

This statement is reinforced by looking at the vision of future development of this stakeholder. The Lotseninsel is regarded as beautiful, but in order to preserve this beauty it must not be overexploited and overcrowded by tourism. On the other hand it is stated that also nature conservancy should not necessarily increase because that would mean that the festival cannot take place on the Lotseninsel any longer. However, it is important to this stakeholder that the festival also takes place in the future. Therefore, it can be summarized that the stakeholder has a weak anthropocentric standpoint in regard to the future development.

The *unmarked space e.V.* is aware of the problems and the current situation of the Lotseninsel. They support the current alterations on the island because it is believed that the island and nature is fragile, but also "dynamic and thus changing anyway" (Plath, 2012). However, with exception of the organization of the festival, this stakeholder is not included in the management of the Lotseninsel. The concept of sustainability is also well known and is interpreted as the "contrary of overexploitation" with as focus on long-term benefits instead of quick profits that destroy the surrounding (Plath, 2012). In addition to that, the stakeholder has a very broad definition of nature and considers all five categories as nature. It can be said that the whole cognitive dimension of this 'image of nature' matches the weak anthropocentric standpoint of the normative dimension.

Concerning the expressive dimension of 'images of nature', it becomes evident that nothing particular lies at the heart of this stakeholder, but that the Lotseninsel as a whole is appealing. However, according to the normative dimension especially the naturalness and the ambience are important to this stakeholder. This is also underlined with the answer that wild and unorganized nature is more appealing than organized nature. In conclusion it can be said that the stakeholder has an aesthetic 'image of nature'.

Event Nature e.V.

Event Nature e.V. offers outdoor education and outdoor training in the nature of the Schlei in order to bring people closer to nature. Trips to the Lotseninsel with a sailing ship or with kayaks are offered to groups of adults and children, including an overnight stay on the island. The interviewee from *Event Nature e.V.* is the manager Günter Hoffmann.

The Lotseninsel is interesting for the company due to its remoteness and naturalness. The fact that there is no traffic and no noise makes it unique. However, according to the interviewee, the naturalness is threatened by the many changes which are currently done all at once. It is regarded as

more favorable if the management of the Lotseninsel only intervenes step-by-step. According to the interviewee, the Lotseninsel is a place where it is possible to experience and learn more about nature. Therefore, it is important to the company that the Lotseninsel remains open to the public while nature is preserved. Based on this perception, it can be said that this stakeholder attaches ecocentric values to the Lotseninsel.

Possibilities for visitors to experience the nature are missing. In the future, this should be changed by promoting “interactive nature conservancy”, which creates possibilities to experience and learn more about nature (Hoffmann, 2012). The appreciation for nature is fostered that way, which can be beneficial for nature itself. Since a certain form of tourism is promoted which focuses on the benefit for nature, it can be said that this stakeholder has a partly ecocentric, partly utilitarian standpoint in regard to the vision of future development of the Lotseninsel.

The stakeholder’s vision of future development is also again found in the definition of sustainability. According to the stakeholder, sustainability is “to give people the possibility to experience and learn about nature" (Hoffmann, 2012). Furthermore, the stakeholder is aware of the current problems of the Lotseninsel. The most important one is “the disagreement between the different interests” (Hoffmann, 2012). According to the interviewee, this problem must be overcome to become sustainable. However, the ideas behind current projects are sometimes not clear to the company. In addition, it is not included in the development of the Lotseninsel. Regarding the remaining aspects of the cognitive dimension of ‘images of nature’, this stakeholder has a very broad definition of nature (five out of five categories are regarded as nature). Furthermore, nature is seen as resilient and dynamic, that always adapts to new situation.

The stakeholder is more appealed by wild and unorganized nature and regards the general naturalness as most important feature of the Lotseninsel. These aspects of the expressive dimension of ‘images of nature’ are compliant with the ecocentric values of the normative dimension. It could thus be said, that the stakeholder has a wilderness ‘image of nature’. However, due to the cognitive dimension and the vision of future development this image is weakened. Therefore, in conclusion it can be said that the stakeholder has a weak wilderness ‘image of nature’.

Ostseefjord Schlei GmbH

The *Ostseefjord Schlei GmbH* is responsible for the tourism of the whole Schlei region and for the tourist marketing. Furthermore, it operates the tourist information centers of the region. The interview was conducted with the marketing director Andrea Simons.

Until now, the *Ostseefjord Schlei GmbH* is not offering tourism services on the Lotseninsel and is not engaged in the tourist marketing of the island. Furthermore, the connection between this company and the *Lighthouse Foundation* is limited to mutual exchange of information about tourist projects. However, the company indicates interest to change this in the future. The current development is watched with interest and potential is seen in the Lotseninsel. Especially the remote location makes the Lotseninsel attractive to the company in a touristic sense. The poor accessibility and logistics might be seen as troublesome, but is not regarded as negative aspect. Instead, it is accepted, because it makes the Lotseninsel “exclusive”. This special ambience combined with the beauty of the area is seen as the flagship of the Lotseninsel. The focus on weak aesthetic aspects is also supported

by the company's view on the management: "The nature should grow on its own but only if it looks nice and not neglected thereby." Therefore, it can be said that this stakeholder attaches weak anthropocentric values to the Lotseninsel.

As already stated, the company sees potential in the Lotseninsel and is therefore interested to offer tours and other tourist services in the future. That does not necessarily mean that tourism on the Lotseninsel need to expanded, but it should at least not be reduced. Additionally, the gastronomic services should be changed. That means that the gastronomy must change from "deep fried food" to "something more exclusive with maybe regional dishes" (Simons, 2012). According to the interviewee, this exclusivity would enhance the ambience and correspond with sustainability. Furthermore, tourist services should be promoted better in the future to bring the Lotseninsel to the tourists' attention. Since this stakeholder mainly focuses on possible tourist services, it can be said that a utilitarian standpoint is taken in regard to the vision of future development.

However, the stakeholder is neither informed about the tourist services that are currently offered on the Lotseninsel nor included in the development process. Nevertheless, the current developments and the work of the *Lighthouse Foundation* are well known and are regarded as positive and worthy of support. Furthermore, the sustainable development, even if the details are not known, is also supported. It is explained as concept to overcome "oppositions between nature and tourism" (Simons, 2012). Regarding the remaining aspects of the cognitive dimension of 'images of nature', the interview revealed that the company has a very broad definition of nature (five out of five categories are regarded as nature) and holds the belief that nature is fragile, but dynamic.

In regard to the expressive dimension of 'images of nature', the company feels not connected with something particular on the island. Furthermore, wild, but also organized nature is appealing, due to the fact that tourists are attracted by both. Since the point of view of the tourists is taken into account in this respect and in regard to the other dimensions, it can be said that priority is given to tourism. However, the stakeholder also knows the importance of nature for tourism and especially focuses on the ambience of nature. Therefore, it is concluded that the stakeholder has a weak functional 'image of nature'.

Naturpark Schlei

The *Naturpark Schlei* is responsible for the conservation management of the whole Schlei. In addition, it is the initiator and supporter of several conservation projects in the area. The representative of this stakeholder is Ulrich Bendlin.

Since the Lotseninsel is situated in the Schlei, the nature conservation but also the tourism on the Lotseninsel becomes interesting for the *Naturpark Schlei.* Especially, the seclusion of the area and closeness to nature makes it special and worth protecting. Nevertheless, the Lotseninsel should not be protected and regulated too strong and should remain open to the public in the future. That way, tourism is promoted while nature conservation would become more appealing and understandable to the public. According to the interviewee, the *Lighthouse Foundation* should focus more on this combination of nature and tourism. However, a good communication between the different actors must also be improved. This displays that the stakeholder has a partly ecocentric partly utilitarian standpoint in respect to the normative dimension and the vision of future development.

This standpoint also influences the interpretation of sustainability. According to the stakeholder, it stands for involving people to bridge and balance the interests of nature and tourism. However, the stakeholder is not included in the development process. In regard to the remaining aspects of the cognitive dimension, it can be said that the stakeholder has a very broad definition of nature (five out of five categories are regarded as nature) and holds the belief that nature is fragile and dynamic.

The expressive dimension again matches the preceding words, since any kind of nature is regarded as beautiful as long as it is open to the public and still protected. In conclusion, it can thus be said that this stakeholder has a weak wilderness 'image of nature', because natural aspects stand central. However, the vision of future development, the cognitive and the expressive dimension display that the alignment of tourism and nature is also important to this stakeholder.

Architect/ hydraulic engineer

Martin Sülzdorff is architect and hydraulic engineer and in charge for the building conversions on the Lotseninsel. According to him, the Lotseninsel is a special place due to its remote position directly on the border between Baltic Sea and Schlei. It is unique because it offers a certain form of freedom and is available for the communality, despite its closeness to nature. In addition, this availability is not hampered by a "strong focus on profit" (Sülzdorff, 2012). This form of management is regarded as very beneficial. Based on this information, it can be concluded that in regard to the normative dimension of 'images of nature', this stakeholder attaches ecocentric, but also utilitarian values to the Lotseninsel.

Concerning the vision of future development, this stakeholder especially focuses on coastal protection. This aspect must be improved in the future, since the current solution is not satisfactory. In addition, the gastronomy on the Lotseninsel needs to be improved. However, it is also necessary that in the future overcrowding is avoided on the Lotseninsel. In conclusion, it can be said that this stakeholder has a rather utilitarian standpoint in his vision of future development.

In regard to the cognitive dimension of 'images of nature', it can be said that the concept of sustainability is not clear to this stakeholder. In addition, he has a narrow definition of nature, since only elements and spontaneous nature are regarded as nature. He also holds the belief that nature is dynamic and fragile. Lastly, concerning the expressive dimension, the stakeholder states that wild nature is more appealing to him. Furthermore, it is important to him that the Lotseninsel as a whole is preserved. This personal importance is also reflected in the vision of future development, because a secure coast will facilitate the preservation of the Lotseninsel. Therefore, in conclusion, it can be said that this stakeholder has a weak functional 'image of nature'.

Painter

The painter Reiner Götsche was initially employed to give artistic form to the Lotsenhaus. However, according to the Lighthouse Foundation, his work, his ideas as well as his knowledge about the history of the Schlei might be incorporated in the future development of the Lotseninsel. Mr. Götsche is in turn very interested in the Lotseninsel, because he sees the potential of the place to bring humans closer to nature.

However, in order to achieve this combination of nature and humans, an interactive exhibition is needed, which could be created by him. This way, visitors could learn something about the area and take the insight with them, instead of just visiting and again leaving the Lotseninsel without any gain. According to him, the Lotseninsel "is made for such an exhibition" (Götsche, 2012). His idea is a quick and memorable exhibition about the interaction of humans and nature of the Schlei in the course of time. It becomes evident that to him the Lotseninsel is regarded as a project or potential work. Therefore, due to his position as employee (rather than user) he does not give clear statements about positive or negative aspects of the Lotseninsel. Therefore, it is difficult to directly predict the values he attaches to the Lotseninsel. It could be said that he attaches utilitarian values to the Lotseninsel because he sees it as a potential job. In contrast, in his eyes it is beneficial if parts of the Lotseninsel are managed without human interventions, as long as they remain open to the public Furthermore, his aim of an exhibition would be the combination of visitors and nature. Therefore, it can be said that he attaches a mix of utilitarian and ecocentric values to the Lotseninsel, both in regard to the normative dimension as well as the vision of future development.

The current situation and the work of the *Lighthouse Foundation* is regarded as very beneficial, especially since the Lotseninsel is still open to the public and free of charge. According to the interviewee, this shows that the Lighthouse Foundation holds their promise of sustainable development. He himself is not included in the development process. However, the idea of sustainable development is very important to him. He interprets it as "a process of learning to become sensible and active to not longer exploit the surrounding without thinking" (Götsche, 2012). Therefore, an intervention in nature is seen as a catastrophe and is directly rejected by him. That indicates that he holds the belief that nature is very fragile. Additionally, due to the fact that he only regards two categories out of five as nature (Elements & spontaneous nature), it can be said that he has a rather narrow definition of nature.

Since the interviewee is more appealed by wild and unorganized nature, the expressive dimension of 'images of nature' also matches the outcome of the cognitive dimension as well as his idea of management (manage without interventions) of the normative dimension. Altogether, these aspects reinforce the assumption that the stakeholder does not have a functional 'image of nature', although the Lotseninsel is only regarded as a potential workplace. Instead, it is more likely that he has a weak functional 'image of nature'.

Naturerlebniszentrum Maasholm

The *Naturerlebniszentrum Maasholm* (NEZ) is an information centre about the Schlei. The interviewee of this stakeholder is Kirsten Giese. The information centre offers a range of activities to tourists, schools, and groups in order to give opportunities to experience and learn about the nature of the Schlei (Naturerlebniszentrum ≙ nature experience centre).

At first glance, this stakeholder is not directly connected with the Lotseninsel, but the island is nevertheless interesting due to its seclusion and naturalness. The stakeholder indicates interest to improve cooperation with the *Lighthouse Foundation* and to conduct excursions from the NEZ, through the nature reserve, to the Lotseninsel. It is regarded as very important that visitors have the opportunity to experience and learn more about nature. This will raise awareness that in turn benefits the conservation of nature. In addition, the idyll of the island must be preserved in the

future development and an overcrowding and noisy activities (e.g. motorboats) must be prevented. The best way to achieve this is a "low-impact management" (Giese, 2012). This all makes evident that this stakeholder has an ecocentric standpoint in regard to the normative dimension and a partly ecocentric partly utilitarian standpoint in respect to the vision of future development. Latter is due to the fact that a certain form of tourism is promoted, but with focus on the benefit for nature.

Until now the NEZ is not included in the management and the future development and usage of the Lotseninsel is unclear to this stakeholder. In contrast, the concept of sustainability is well-known and is interpreted as an intergenerational equity and the "prevention of harm to nature through use" (Giese, 2012). In addition to these aspects of the cognitive dimension, the stakeholder has an average definition of nature (the categories elements, spontaneous nature and designed nature are defined as nature). Furthermore, nature is regarded as very fragile. This all corresponds and fills in the ecocentric aspects of the former dimensions of 'images of nature'.

The expressive dimension also corresponds with the former results, because wild and unorganized nature is more appealing to the stakeholder. Additionally, the interviewee states that nothing particular, but the Lotseninsel as a whole is regarded as very important. In conclusion, it can thus be said that the stakeholder has a wilderness 'image of nature', that is a little bit weakened by the vision of future development.

Planungsbüro PLEWA

The *Planungsbüro PLEWA* is a planning office that works together with the *Lighthouse Foundation* on a land-use plan for the Lotseninsel. The interview was conducted with Camilla Grätsch. The *Planungsbüro PLEWA* is also in charge for other land-use plans and projects in the Schlei region.

However, the Lotseninsel is regarded as highlight of the region due to the fact that it is the only island-like and most remote area in the Schlei. Additionally, the Lotseninsel becomes interesting because of its closeness to nature. According to the interviewee, this feature must be preserved in order that the Lotseninsel remains natural and attractive. An intensive use of the Lotseninsel is regarded as threat to the area. Therefore, especially in the main season the number of visitors must be regulated. In this regard, the stakeholder also states that the overcrowding in the summer months is regarded as negative. Derived from this information, it can be said that concerning the normative dimension of 'images of nature', this stakeholder attaches rather ecocentric values to the Lotseninsel.

Nevertheless, in the future a combination of tourism and nature is regarded as necessary. The accessibility of the nature reserve should be enhanced in order to create possibilities for visitors to experience nature. In addition, a framework that only allows activities that do not disturb the ambience of the Lotseninsel should be created. However, according to the stakeholder, there are no such activities in the current forms of usage. Nevertheless, it must be ensured that overcrowding is prevented. Therefore, in regard to the vision of future development it can be concluded that this stakeholder has a partly ecocentric partly utilitarian standpoint

The idea to combine tourism and nature can also be found in the cognitive dimension. Sustainability is for instance interpreted as the "alignment of economy, nature and society" (Grätsch, 2012).

Furthermore, the stakeholder holds the belief that nature is fragile and dynamic, but that interventions are sometimes necessary. Lastly, it can be said that the stakeholder has a rather narrow definition of nature. Only two categories (elements & spontaneous nature) are regarded as nature, while the rest is called “cultivated landscapes”.

The tendency to prefer natural landscapes to cultivated landscapes can also be found in the expressive dimension of ‘images of nature’, because wild nature is regarded as more appealing. Therefore, the Lotseninsel should remain as natural as it is. However, the stakeholder has the feeling that the Lotseninsel is not an insider’s tip anymore. Based on all this information, it can be concluded that this stakeholder has a weak wilderness ‚image of nature‘, due to the fact that nature is regarded as highest good, which nevertheless needs to be combined with tourism.

VII. Tables of comparison of all 'images of nature'

The following tables were used to compare the different 'images of nature'. That way similarities and differences could be detected.

Figure 40: Detailed overview of the different 'images of nature' of every stakeholder

Images of nature					
Factors / Actors	Wilderness	Weak wilderness	Aesthetic	Weak functional	Functional
Lighthouse Foundation		X			
Verein Jordsand	X				
Wasserwanderplatz Schleimünde					X
Harbor master			X		
City of Kappeln				X	
Municipality Maasholm					X
Schlei Ausflugsfahrten				X	
Reisedienst Müller GmbH					X
Kanuverband Schleswig-Holstein		X			
Unmarked space e.V.			X		
Event Nature		X			
Ostseefjord Schlei GmbH				X	
Naturpark Schlei		X			
Architect/ hydraulic engineer				X	
Painter				X	
NEZ		X			
PLEWA		X			
Visitors (with ferry)				X	
Visitors (with sailing boat)		X			
Visitors (with motorboat)				X	
Visitors (with canoe, etc.)		X			
CONCLUSION	1	8	2	7	3
Difference	- Most stakeholders have moderate point (weak wilderness or weak functional) - Only few "pure" images				

Figure 41: Overview of answers to the different aspects of the normative dimension

Normative dimension				
Factors / Actors	Most valued aspects	Negative aspects	Preferred management	Value (conclusion)
Lighthouse Foundation	Remoteness; close to nature; potential example of sustainability	Overcrowding; lack of cooperation; Gastronomy	Only basic requirements; no massive interventions	Ecocentric
Verein Jordsand	Nature; coexistence nature & humans	No remarks	Maximum limit for visitors	Biocentric
Wasserwanderplatz Schleimünde	Remoteness; starting points for trips	No remarks	No regulation of visitors; ensure accessibility;	Utilitarian
Harbor master	Remoteness, close to nature, simple ambience; freedom	No remarks, with exception of gastronomy	Slight regulations to preserve freedom	Weak anthropocentric & ecocentric
City of Kappeln	Coastal protection; tourism	No remarks	ensure accessibility	Utilitarian
Municipality Maasholm	Coastal protection; tourism	No remarks	Low-impact management	Utilitarian
Schlei Ausflugsfahrten	Remoteness; only accessible with ship = mean of existence	Sanitary facilities; gastronomy	Middle course of management to preserve as inside tip	Utilitarian
Reisedienst Müller GmbH	Remoteness; only accessible with ship = mean of existence	No remarks	Promote tourism	Utilitarian
Kanuverband Schleswig-Holstein	Remoteness; close to nature; idyllic & simple ambience	No remarks	Ensure accessibility; minimum infrastructure	Ecocentric & weak anthropocentric
Unmarked space e.V.	Ambience (through seclusion, beauty)	No remarks, with exception of gastronomy	Middle course of management to preserve key aspects	Weak anthropocentric
Event Nature	Remoteness, naturalness	Too many changes all at once	Step-by-step intervention	Ecocentric
Ostseefjord Schlei GmbH	Remoteness; tourism; ambience & beauty	No remarks	Focus on aesthetic aspects	Weak anthropocentric
Naturpark Schlei	Remoteness, close to nature	No remarks	Not too strong regulations; ensure accessibility	Ecocentric & utilitarian
Architect/ hydraulic engineer	Remoteness, freedom	No remarks	No strong focus on profit; ensure accessibility	Ecocentric & utilitarian
Painter	Potential to bring humans closer to nature	No remarks	Remain open for public; partly without human interventions (hands-off)	Ecocentric & utilitarian
NEZ	Remoteness; close to nature	No remarks	Low-impact management to preserve idyll	Ecocentric
PLEWA	Remoteness; close to nature	Overcrowding	No intensive use; Regulation of visitors	Ecocentric
Visitors (with ferry)	Ecocentric & aesthetic aspects	No remarks	Hands-off management;	Ecocentric & weak anthropocentric
Visitors (with sailing boat)	Ecocentric aspects	No remarks OR ecocentric aspects (pollution; rush)	Hands-off management; focus on animals	Ecocentric
Visitors (with motorboat)	Ecocentric & aesthetic aspects	No remarks OR ecocentric aspects (pollution; rush)	No significant preference for form of management	Ecocentric & weak anthropocentric
Visitors (with canoe, kayak, etc.)	Ecocentric aspects	/	No significant preference for form of management	Ecocentric
CONCLUSION	Cf. Figure 42	Cf. Figure 43	Cf. Figure 44	Cf. Figure 45

Figure 42: Detailed overview of the most valued aspect of the normative dimension

Most valued aspects							
Factors / Actors	Remoteness/ seclusion	Nature	Tourism/ usage	Free-dom	Coastal protection	Beauty/ ambience	Sustainability principles
Lighthouse Foundation	X	X					X
Verein Jordsand		X					X
Wasserwanderplatz Schleimünde	X		X				
Harbor master	X	X		X			
City of Kappeln			X		X		
Municipality Maasholm			X		X		
Schlei Ausflugsfahrten	X		X				
Reisedienst Müller GmbH	X		X				
Kanuverband Schleswig-Holstein	X	X				X	
Unmarked space e.V.	X					X	
Event Nature	X	X					
Ostseefjord Schlei GmbH	X		X			X	
Naturpark Schlei	X	X					
Architect/ hydraulic engineer	X			X			
Painter							X
NEZ	X	X					
PLEWA	X	X					
Visitors (with ferry)	X	X				X	
Visitors (with sailing boat)	X	X					
Visitors (with motorboat)	X	X				X	
Visitors (with canoe, etc.)	X	X					
CONCLUSION	17	12	6	2	2	5	3
Similarity	- Majority of stakeholders (17 out of 21; majority threshold = 14) chose remoteness = main aspect						
Difference/ Exceptions	- Aspect of remoteness is connected with different other aspects, especially with nature (11), tourism (4), and beauty/ambience (5), but also with freedom (2) = supplemental aspects - Other aspects are only nature (1), only tourism (2), coastal protection (2), and sustainability aspects (3)						

Figure 43: Detailed overview of the negative remarks of the normative dimension

Negative remarks						
Factors / Actors	No remarks	Overcrowding/ Pollution	Gastronomy	Sanitary facilities	Coop-eration	Too many changes
Lighthouse Foundation		X	X		X	
Verein Jordsand	X					
Wasserwanderplatz Schleimünde	X					
Harbor master	X		X			
City of Kappeln	X					
Municipality Maasholm	X					
Schlei Ausflugsfahrten			X	X		
Reisedienst Müller GmbH	X					
Kanuverband Schleswig-Holstein	X					
Unmarked space e.V.	X		X			
Event Nature						X
Ostseefjord Schlei GmbH	X					
Naturpark Schlei	X					
Architect/ hydraulic engineer	X					
Painter	X					
NEZ	X					
PLEWA		X				

Visitors (with ferry)	X					
Visitors (with sailing boat)	X	X				
Visitors (with motorboat)	X	X				
Visitors (with canoe, etc.)	/	/	/	/	/	/
CONCLUSION	16	4	4	1	1	1
Difference	- 12 out of 20 do not give negative remarks (majority threshold = 13) ; - Several negative remarks, especially about the problem of overcrowding and the state of the gastronomy - [visitors with canoe are excluded due to insufficient data]					

Figure 44: Detailed overview of the preferred form of management of the normative dimension

Preferred management					
Factors / Actors	Middle course (slight regulations & interventions	No intensive use/ strict regulations	Intensive use/ no regulations	Ensure accessibility	Focus on certain aspects
Lighthouse Foundation	X				
Verein Jordsand		X			
Wasserwanderplatz Schleimünde			X	X	
Harbor master	X				Freedom
City of Kappeln				X	
Municipality Maasholm	X				
Schlei Ausflugsfahrten	X				Inside tip
Reisedienst Müller GmbH			X		
Kanuverband Schleswig-Holstein	X			X	
Unmarked space e.V.	X				Ambience; nature
Event Nature	X				
Ostseefjord Schlei GmbH					Aesthetics
Naturpark Schlei	X			X	
Architect/ hydraulic engineer				X	No focus on profit
Painter		X		X	
NEZ	X				Idyll
PLEWA		X			
Visitors (with ferry)		X			
Visitors (with sailing boat)		X			
Visitors (with motorboat)	/	/	/	/	/
Visitors (with canoe, etc.)	/	/	/	/	/
CONCLUSION	9	5	2	6	6
Differences	- Many stakeholders (9 = no two thirds majority; threshold = 13) prefer middle course of management, but often with different focus; - Middle course = moderate standpoint other opinions are more radical and strongly opposing = no intensive use/ strict regulations (5) vs. intensive use/ no regulations - Accessibility is the second most common answer (6); it is reconciled with any other opinion by few stakeholders. - [visitors with motorboat and canoe excluded due to insufficient data]				

Figure 45: Detailed overview of the different assignment of values of the normative dimension

Values (conclusion based on three aspects of normative dimension)						
Factors / Actors	Ecocentric	Biocentric	Weak anthropocentric	Utilitarian	Ecocentric & weak anthropocentric	Ecocentric & utilitarian
Lighthouse Foundation	X					
Verein Jordsand		X				
Wasserwanderplatz Schleimünde				X		
Harbor master					X	
City of Kappeln				X		
Municipality Maasholm				X		
Schlei Ausflugsfahrten				X		
Reisedienst Müller GmbH				X		
Kanuverband Schleswig-Holstein					X	
Unmarked space e.V.			X			
Event Nature	X					
Ostseefjord Schlei GmbH			X			
Naturpark Schlei						X
Architect/ hydraulic engineer						X
Painter						X
NEZ	X					
PLEWA	X					
Visitors (with ferry)					X	
Visitors (with sailing boat)	X					
Visitors (with motorboat)					X	
Visitors (with canoe, etc.)	X					
CONCLUSION	6	1	2	5	4	3
Difference	- No common valuing (majority threshold = 14) - Contrasting values (ecocentric and utilitarian)with nearly same share of votes; Intermediate/ moderate forms try to combine contrasting aspects					

Figure 46: Overview of the answers to the vision of future development

Factors / Actors	Promotion	Against promotion/ Prevention	Remain as it is	Vision (conclusion)
Lighthouse Foundation	Cooperation; education for sustainable development; marketing of new forms of usage	Overcrowding & overexploitation		Ecocentric & utilitarian
Verein Jordsand	Cooperation; nature exhibition; nature protection	More buildings; more touristic services; overcrowding; no open nature area		Ecocentric
Wasserwanderplatz Schleimünde	Cooperation	More nature conservation	Not too many changes; Not reduce activities	Utilitarian
Harbor master	Aesthetic details (20%)		80% remain as it is	Weak-anthropocentric
City of Kappeln	Touristic services & marketing; Possibilities to experience nature	Change image of secluded place → overcrowding		Ecocentric & utilitarian
Municipality Maasholm	Tourism; coastal protection Combine nature & tourism			Utilitarian
Schlei Ausflugsfahrten	Touristic services; day visitors; gastronomy;		Neither more tourism nor conservation	Utilitarian
Reisedienst Müller GmbH	Touristic services; freshwater provision; gastronomy			Utilitarian
Kanuverband Schleswig-Holstein	Possibilities to experience nature Preserve ambience Preserve beauty	Overcrowding		Ecocentric & weak anthropocentric
Unmarked space e.V.	Festival	Overexploitation; Overcrowding; more conservation		Weak anthropocentric
Event Nature	Possibilities to experience nature			Ecocentric & utilitarian
Ostseefjord Schlei GmbH	Do not reduce tourism; Change gastronomy; Promote touristic services; cooperation	Change simple ambience		Utilitarian
Naturpark Schlei	Communication; Combine tourism and nature			Ecocentric & utilitarian
Architect/ hydraulic engineer	Coastal protection; Gastronomy	Overcrowding		Utilitarian
Painter	Combine visitors and nature			Ecocentric & utilitarian
NEZ	Possibilities to experience nature; Preserve idyll; coop.	Overcrowding; Noisy activities		Ecocentric & utilitarian
PLEWA	Combine visitors and nature; Access to nature			Ecocentric
Visitors (with ferry)	Nature and biodiversity conservation; renewable energies; ferry service;	Water sports; culture; motor boating	Tourism; job opportunities; fishing	Ecocentric & utilitarian
Visitors (with sailing boat)	Nature and biodiversity conservation; renewable energies; water sports; sailing	Culture; tourism; ferry service; motor boating	job opportunities; fishing	Ecocentric & utilitarian
Visitors (with motorboat)	Nature and biodiversity conservation; renewable energies; water sports; sailing	Culture; tourism;	Ferry service; job opportunities; fishing	Ecocentric & utilitarian
Visitors (with canoe, kayak, etc.)	Nature and biodiversity conservation; renewable energies; water sports; tourism; sailing	Culture; ferry service; motor boating	job opportunities; fishing	Ecocentric & utilitarian
CONCLUSION	Cf. Figure 47			Cf. Figure 48

Figure 47: Detailed overview of the aspects of the vision of future development

Most important aspects of the vision of future development										
Factors / Actors	Tourism (services, buildings & marketing)	Nature conser-vation	Combi-nation of nature & tourism	Over-crowd-ing	Aes-thetics, am-bience	Cultural events	Ferry service	Water sports/ sailing	Motor boats	Coop-eration
Lighthouse Foundation	+			–						+
Verein Jordsand	–	+		–						+
Wasserwanderplatz Schleimünde		=				=	=	=	=	+
Harbor master	=	=			+/ =	=	=	=	=	
City of Kappeln	+		+	–						
Municipality Maasholm	+		+							
Schlei Ausflugsfahrten	+	=					=			
Reisedienst Müller GmbH	+						=			
Kanuverband Schleswig-Holstein			+	–	=					
Unmarked space e.V.		=		–		+				
Event Nature			+							
Ostseefjord Schlei GmbH	+				–					+
Naturpark Schlei			+							+
Architect/ hydraulic engineer	+			–						
Painter			+							
NEZ			+	–					–	+
PLEWA			+	–						
Visitors (with ferry)	=	+	/	/	/	–	+	–	–	/
Visitors (with sailing boat)	–	+	/	/	/	–	–	+	–	/
Visitors (with motorboat)	–	+	/	/	/	–	=	+	–	/
Visitors (with canoe, etc.)	+	+	/	/	/	–	–	+	–	/
CONCLUSION										
Promote/ improve	8	5	8	0	1	1	1	3	0	6
Reduce/ prevent	3	0	0	8	1	4	2	1	5	0
Preserve current situation	3	4	0	0	2	2	3	2	2	0
No. stakeholders	14	9	8	8	4	7	6	6	7	6
Threshold majority	9	6	5	5	3	5	4	4	5	4
	Dif.	Dif.	Sim.	Sim.	Dif.	Dif.	Dif.	Dif.	Sim.	Sim.
Remark	- Visitors could only give a statement about the aspect which were included in the survey; they are thus excluded in regard to the marked aspects (marked with /)									

Figure 48: Detailed overview of the conclusion of the vision of future development

Vision of future development (conclusion)					
Factors / Actors	Ecocentric	Weak anthropocentric	Utilitarian	Ecocentric & weak anthropocentric	Ecocentric & utilitarian
Lighthouse Foundation					X
Verein Jordsand	X				
Wasserwanderplatz Schleimünde			X		
Harbor master		X			
City of Kappeln					X
Municipality Maasholm			X		
Schlei Ausflugsfahrten			X		
Reisedienst Müller GmbH			X		
Kanuverband Schleswig-Holstein				X	
Unmarked space e.V.		X			
Event Nature					X
Ostseefjord Schlei GmbH			X		
Naturpark Schlei					X
Architect/ hydraulic engineer			X		
Painter					X
NEZ					X
PLEWA	X				
Visitors (with ferry)					X
Visitors (with sailing boat)					X
Visitors (with motorboat)					X
Visitors (with canoe, etc.)					X
CONCLUSION	2	2	6	1	10
Difference	- Many different visions of future development - Most visions (no majority) combine contrasting aspects.				

Figure 49: Detailed overview of the conclusion of the vision of future development

Cognitive dimension					
Factors / Actors	Definition sustainability	Definition nature	Belief	Degree of involvement	Opinion about recent development
Lighthouse Foundation	Balancing PPP	Narrow	Fragile & dynamic	Owner; gives actors many opportunities to get involved	-
Verein Jordsand	Intergenerational equity	Narrow	Fragile	Insufficient	Positive
Wasserwanderplatz Schleimünde	Not clear	Very broad	Resilient	Involved	Ideas are unclear
Harbor master	Preservation of nature and human needs	Broad	Fragile	Involved	Positive
City of Kappeln	Possibility to experience and understand nature	Very broad	Dynamic	Involved	-
Municipality Maasholm	Not clear	Very broad	Resilient	Not involved	Not much information
Schlei Ausflugsfahrten	Not clear	Broad	Fragile & dynamic	Not involved	Measures are unclear
Reisedienst Müller GmbH	Gentle, low-impact tourism	Average	Fragile	Not involved	-
Kanuverband Schleswig-Holstein	Long-term planning	Very broad	Fragile	Not involved	Positive
Unmarked space e.V.	No overexploitation	Very broad	Dynamic	Restricted	Positive
Event Nature	Possibility to experience nature	Very broad	Resilient & dynamic	Not involved	Aware about problems, but ideas unclear
Ostseefjord Schlei GmbH	no contradiction between nature & tourism	Very broad	Fragile & dynamic	Not involved	Positive
Naturpark Schlei	Balance nature & tourism by involving people	Very broad	Dynamic	Not involved	-
Architect/ hydraulic engineer	Not clear	Narrow	Fragile& dynamic	Involved	-
Painter	No overexploitation	Narrow	Fragile	Not involved	Positive
NEZ	Intergenerational equity	Average	Fragile	Not involved	Unclear
PLEWA	Balancing PPP	Narrow	Fragile& dynamic	Involved	-
Visitors (with ferry)	Not clear	Narrow	Fragile & dynamic	Not involved (unwilling)	Partly unclear
Visitors (with sailing boat)	Not clear	Narrow	Fragile & dynamic	Not involved (unwilling)	Partly unclear
Visitors (with motorboat)	Not clear	Very broad	Fragile & dynamic	Not involved (unwilling)	Partly unclear
Visitors (with canoe, kayak, etc.)	Not clear	Very broad	Fragile & dynamic	Not involved (unwilling)	Partly unclear
CONCLUSION	Cf. Figure 50	No common definition; narrow (7); average (2), broad (2) very broad (10)	18 x fragile; (12 x dynamic); 3 x resilient (1 x dynamic).	Lighthouse Foundation gives opportunities 9 x not involved, 5 x sufficiently, 4 x not willing 2 x insufficient/ restricted	6 x positive 9 x unclear 6 x no information

Figure 50: Detailed overview of the different ideas of sustainability

Factors / Actors	No idea	Preserve nature/ no overexploi-tation	Balance & combine nature & humans	Inter-genera-tional equity	Low-impact tourism	Long term planning	Align PPP
Lighthouse Foundation							X
Verein Jordsand				X			
Wasserwanderplatz Schleimünde	X						
Harbor master			X				
City of Kappeln			X				
Municipality Maasholm	X						
Schlei Ausflugsfahrten	X						
Reisedienst Müller GmbH					X		
Kanuverband Schleswig-Holstein						X	
Unmarked space e.V.		X					
Event Nature			X				
Ostseefjord Schlei GmbH			X				
Naturpark Schlei			X				
Architect/ hydraulic engineer	X						
Painter		X					
NEZ				X			
PLEWA							X
Visitors (with ferry)	X						
Visitors (with sailing boat)	X						
Visitors (with motorboat)	X						
Visitors (with canoe, etc.)	X						
CONCLUSION	8	2	5	2	1	1	2
Differences	- No common interpretation of sustainability (majority threshold= 14) - Instead, many different ideas which partially complement each other - Many stakeholders (8) do not know the concept						

Figure 51: Overview of the aspects of the expressive dimension

Factors / Actors	Preferred nature	Personal importance
Lighthouse Foundation	Wild	Island as a whole
Verein Jordsand	Wild	Peacefulness in winter and when island is empty
Wasserwanderplatz Schleimünde	Organized	Restaurant *Giftbude*
Harbor master	Wild	Simple ambience
City of Kappeln	Wild & organized	Nothing
Municipality Maasholm	Wild	Nothing
Schlei Ausflugsfahrten	Wild	Lighthouse
Reisedienst Müller GmbH	Wild & organized	Lighthouse
Kanuverband Schleswig-Holstein	Wild	Nothing
Unmarked space e.V.	Wild	Island as a whole
Event Nature	Wild	Naturalness
Ostseefjord Schlei GmbH	Wild & organized	Nothing
Naturpark Schlei	Wild & organized	Nothing
Architect/ hydraulic engineer	Wild	Island as a whole
Painter	Wild	Nothing
NEZ	Wild	Island as a whole
PLEWA	Wild	Naturalness
Visitors (with ferry)	Wild	Nothing
Visitors (with sailing boat)	Wild	Giftbude, harbor, ambience ,naturalness, accessibility
Visitors (with motorboat)	Wild	Nothing
Visitors (with canoe, etc.)	Wild	Nothing
CONCLUSION	16x Wild; 1x Organized; 4x Both	9 x nothing; 4 x island; 4 x facilities; 5 x attributes

VIII. List of principles of sustainable development

The following table describes the several principles of sustainable development which were used to detect compliances and conflicts with the 'images of nature'

Figure 52: List of principles of sustainable development which are applicable in the case of the Lotseninsel

Principle/ requirement	Description
Importance of values	"Values [which are] underlying the concept of sustainability are critical" for a successful sustainable development (Kay/Alder, 2005:17)
Intra-generational equity	Activity of one does not have a negative impact on others (European Union, 2002; Carter, 2007)
Respect the carrying capacity	Do not exceed limitations imposed by carrying capacity; Carrying capacity is the maximum number of people an area and its resources can support (Wall/ Mathieson, 2006)
Precautionary principle	"A lack of full scientific certainty should not be used as reason for postponing cost-effective measures [and regulations]to prevent environmental degradation (Carter, 2007: 222)
Triple bottom line	Balance economical, environmental & socio-cultural aspects (Kay/2005)
Policy integration	Extend and integrate environmental considerations in the policies of every sector; "share knowledge [...] to achieve goal of sustainability (UNEP, 1992: point 14)
Integration of conservation and development	No trade-offs between economical growth and environmental protection (Carter, 2007; Kay/Alder, 2005). Instead, it is necessary to maintain a balance between nature protection and development (Post/Lundin, 1996)
Environmental protection	Prevent ecosystem degradation, "mainly through prevention of habitat destruction, pollution and overexploitation" (Post/Lundin, 1996: 5, point 2) Apply principles to prevent pollution (e.g. polluter pays) (Kay/Alder, 2005) "Environmental protection shall constitute an integral part of the development process" (UNEP, 1993: point 6).
Satisfaction of basic needs	Make sure that everybody can satisfy their basic needs (this includes food, water, shelter, sanitation, etc.) (Kay/Alder, 2005)
Ensure economical viability	"sustainable economic opportunities and employment options as sources of durable financing for integrated coastal zone management initiatives" are needed (European Union, 2002: 25, chapter 1, point d)
Reduce conflicts	Provide mechanisms, which reduces & resolve conflicts between stakeholders
Dynamics of ecosystems	Ecosystems are always regarded as being fragile and dynamic (Kay/ Alder, 2005) → according to the ecosystem-approach
Information dissemination	"Adequate systems for monitoring and disseminating information for the public" must be established (European Union, 2002: 26, chapter 4, point d
Promote awareness	Awareness about sustainable development and environmental protection should be promoted. Information must be made widely available (Post/Lunding, 1996; UNEP, 1993)
Democracy & participation	All parties must be involved in the management process in order to work towards democratically agreed objectives in order to handle environmental issues (UNEP, 1993; European Union).

IX. Tables of comparison of 'images of nature' and principles

Figure 53: Comparison of outcome of the normative dimension and principles of sustainable development

Normative dimension				
Similarities/ differences / **Principles/ requirements**	**Similarity**	**Difference**		
	Most valued aspect is remoteness	Exceptions of 1st similarity (supplemental aspects & assignment of values)	Negative remarks (pollution & (overcrowding)	Preferred form of manage-ment
Importance of values	+	–		
Intra-generational equity				
Respect carrying capacity			–	–
Precautionary principle				–
Triple bottom line				–
CONCLUSIONS	Compl.	Conflict	Conflict	Conflict
	- 1st conflict mitigates 1st compliance of normative dimension - 2nd and 3rd conflict reinforce each other and mitigates 2nd compliance of vision			

Figure 54: Comparison of outcome of the cognitive dimension and principles of sustainable development

Cognitive dimension					
Similarities/ differences / **Principles/ requirements**	**Similarities**	**Difference**			
	Belief (nature is fragile & dynamic)	Opinion about current situation	Interpretation of sustainability	Definition of nature	Degree of involve-ment
Environmental protection	+			–	
Reduce conflicts					
Dynamics of ecosystems	+				
Information dissemination		–			
Promote awareness			–		
Democracy & participation					–
CONCLUSIONS	Impact/ Compl.	Confl.	Confl.	Impact	Confl.
	- 1st compliance mitigates 2nd conflict of vision and reinforces 2nd compliance of vision - 3rd conflict reinforces 2nd conflict of vision and weakens 2nd compliance of vision - 1st, 2nd & 4th conflicts underline current situation of 3rd compliance of vision				

Figure 55: Comparison of outcome of the vision of future development and sustainability principles

Vision of future development								
Similarities/ differences / **Principles/ requirements**	**Similarities**				**Difference**			
	Combine tourism & nature	Prevent over-crowd-ing	Promote coop-eration	Reduce motor boats	Form & level of tourism	Level of nature conser-vation	Form of aes-thetics	Form & level of activities
Intra-generational equity				+				–
Respect carrying capacity		+			–			
Policy integration			+					
Integration of conservation & development	+							
Environmental protection		+				–	–	
Satisfaction of basic needs					–			
Ensure economical viability					–			
Reduce conflicts								–
Democracy & participation			+					
CONCLUSIONS	Compl.	Compl.	Compl.	Compl.	Confl.	Confl.	Confl.	Confl.
	- 2nd compliance weakens 2nd and 3rd conflict of normative dimension - Current situation of 3rd compliance leads to conflicts (cf. cognitive dimension) - 4th compliance reinforce 2nd compliance of normative dimension - 1st conflict mitigates 2nd compliance of vision - 2nd conflict weakens 2nd compliance - 3rd conflict has impact on 2nd conflict							

Figure 56: Comparison of outcome of the expressive dimension and principles of sustainable development

Expressive dimension		
Similarities/ differences / **Principles/ requirements**	**Similarities**	**Difference**
	Aesthetical experience of nature	Personally important aspect
Environmental protection	+	
Reduce conflicts		–
CONCLUSIONS	Only impact	Only impact
	- Compliance reinforces similarity of cognitive dimension and 2nd similarity of vision. It also mitigates 2nd & 3rd conflict of vision and 3rd conflict of cognitive dimension - Conflict reinforces all conflicts of vision	