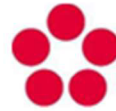




Westsächsische Hochschule Zwickau
University of Applied Sciences
HOCHSCHULE FÜR MOBILITÄT | UNIVERSITY FOR MOBILITY



Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice

Jihočeská univerzita v Českých Budějovicích
Université Bretagne Sud
Westsächsische Hochschule Zwickau

Master Thesis

Regional and European Project Management

Regional development: A case study on sustainability factors

A case study on the sale of voluntary carbon certificates and
sustainable regional development using the example of

MoorFutures

Author: Lucas-Bénédict Paris
Supervision: Prof. Dr. phil. Doris Fetscher

Abstract

This master thesis examines success-factors for the sale of MoorFutures voluntary carbon certificates, as well as the influence of regional contexts on sales and project realization. Furthermore, this thesis seeks to find out if the certificates contribute to sustainable regional development. With nature-based climate protection approaches playing a vital role in the fight against climate change, MoorFutures offers an alternative to state funded efforts through a flexible regional alternative financing tool for rewetting peatlands. As the influencing factors for voluntary carbon certificates from peatland rewetting are yet to be widely researched, this master thesis aims to offer possible aspects for further research. The methodical structure is an embedded single case study where MoorFutures as a brand is the object of study and the states of Mecklenburg-Vorpommern, Brandenburg and Schleswig Holstein will serve as units of analysis. Empirical data derived from qualitative expert interviews and project documents will be used to investigate the topics. The data analysis concludes that MoorFutures success-factors can be attributed to the rise of climate awareness movements, the strategic positioning in the current scientific and political discourse as well as a strong support on the regional level. Furthermore, MoorFutures and its features corresponds to the statistical preferences expressed by buyers of voluntary carbon certificates. Regional context also proves to be a crucial factor of influence, but they are expressed differently depending on the state regarding sales and project realization. MoorFutures has been found to contribute to sustainable regional development through long-term improvements of ecosystems, as a long-term financial contribution method to local landowners and improving the wellbeing of local communities by creating more untouched and biodiverse habitats. A further major point is the contribution to education towards sustainable regional development displayed during marketing as well as the implementation of projects by MoorFutures partners.

Table of Contents

1 Introduction.....	1
2 Theoretical framework.....	2
2.4 Voluntary carbon market	3
2.4.2 Current discussions and criteria	3
2.5 Voluntary carbon market in Germany	4
2.6 MoorFutures®	4
3 Methodology	5
3.1 interviews	5
4 Results	6
4.1 Climate awareness	6
4.2 Positioning in the political and scientific discourse	6
4.3 Regional marketing	6
4.4 Motivation of buyers.....	7
4.5 Networks and structures.....	7
4.6 Land acquisition and cooperation.....	9
4.7 Dealing with concerns during sales and implementation	9
4.8 Fulfillment of the MoorFutures criteria	9
5 Analysis.....	10
5.1 Successfactors	10
5.2 Role of the regional context for the sale of MoorFutures	11
5.3 Role of the regional context in implementation	11
5.4 Contribution to the regional sustainable development of the federal states	12
5.5 Limitations.....	13
6 Conclusion	13
7 Bibliography	15

1 Introduction

Peatlands are versatile and underestimated. They cover 4 % of the world's land area and bind 30 % of our planet's carbon. The aim of climate protection is to save harmful greenhouse gases. Peatlands have an important role to play here. In Germany, a country formerly rich in peatlands, 92 % of peatlands have been drained, most of them for agricultural use. This results in a continuous source of greenhouse gases which, at 54 million tons per year, emits twice as many greenhouse gas equivalents as domestic air traffic in Germany. With a share of 5 % of Germany's land area, drained peatlands account for 7 % of Germany's total greenhouse gas balance (Ullendahl et al., 2023). Even before federal strategies and action plans were published, peatland protection was targeted as a climate protection measure in these states. At 30 %, drained peatlands are the largest source of emissions in Mecklenburg-Western Pomerania, for example. Peatland protection projects for rewetting are implemented through large projects with state funding. In addition to state programs using public funds, a voluntary contribution to climate protection is also crucial. This work investigates MoorFutures. MoorFutures certificates are an instrument for financing actions to rewet peatlands with the aim of saving and binding carbon emissions. As a regionally embedded, flexible instrument for financing peatland rewetting projects in the form of voluntary carbon certificates, it enables private individuals and companies to make a voluntary contribution to climate protection. As of today, all certificates from implemented MoorFutures projects have been sold out.

The aim of this study is to identify success factors for the sale of MoorFutures projects and to find out how the regional contexts of the federal states affect the implementation of the projects and the sale. In addition, the extent to which MoorFutures contributes to sustainable regional development in the respective federal states is examined.

This thesis is divided into two sections. Firstly, the theoretical framework based on a literature review and secondly, the qualitative empirical research. The second chapter deals with the theoretical concepts of sustainable regional development and the topic of voluntary carbon credits, followed by an introduction and explanation of MoorFutures. In the following section, the methodological approach of this work is presented. The theoretical part ends with the description of the methodology and is followed by the empirical part. The results of the qualitative content analysis are presented and then analyzed in the fifth section, the discussion, interpreted on the basis of the theoretical framework and concluded with a look at the limitations of this work. The final chapter draws a conclusion and provides possible approaches for future research.

2 Theoretical framework

Sustainable regional development combines two concepts and three terms. These are explained below and linked to natural climate protection. The concept of sustainable development is based on the ideas of classical economists in the debate on the scarcity of natural resources versus economic growth (Pigou, 1920). The 1987 Brundtland Report of the World Commission on Environment and Development established a basic definition of sustainable development, which is referred to in current literature (Brundtland, 1987; Hauff, 2021; Mensah, 2019)

"Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987).

Since then, the concept and term of sustainable development have become increasingly important. The most recent example is the 2030 Agenda with its 17 sustainable development goals. The concept of sustainable development embodies three pillars. The first is the economic pillar, which is based on the economy's ability to use existing resources efficiently and thus meet the demand of current generations without negatively impacting that of future generations (Mensah, 2019). The second pillar of social sustainability aims to ensure that conditions are created that not only meet all needs, but also enable all people to meet their own needs (Kolk, 2016). The third pillar is environmental sustainability. It refers to the natural environment and the capacity to maintain productivity and resilience to support human life in its development.

There is a consensus that sustainable development is present as part of all political agendas at national, European and global level. (Dühr, 2005; Abubakar, 2017, Mensah, 2019; Cerin, 2006; Haughton & Counsell, 2004; Marynych, 2017). One criticism of the ubiquity of the term is that it is too vague and can be used flexibly depending on the political framework (Dühr, 2005). A comparable flexibility can also be observed in the concept of development in relation to regions. As illustrated by Pike et al. (2007), a uniform classification of development is not possible, as it depends on the place, time and people who define the term.

Basically, sustainable regional development is described as the application of the principles of sustainability to regional development. The decisive factor here is to implement the endeavor to achieve a balance between the sustainability dimensions in planning within the framework of the regional conditions. (Heisler, 2014; Haughton & Counsell, 2004; Jovovic et al., 2017). The term region can also be defined in different ways: For example, a region can result from similarities in economic focus, historically connecting developments or shared ecosystem structures (Heisler, 2014).

An evolution of the term can also be observed in regional development. The expansion of the dimensions is an important factor here. The understanding that economic growth was the basis of regional development was questioned and further developed in the 1970s. Specifically, this was due to the emergence of local actors who challenged the economically centered structures and new alternatives to the existing model were

developed. The social aspects of regional development were defined as important and subsequently expanded to include the dimensions of the environment, politics and culture (Pike et al. 2007). Despite the expansion of the concept, it has been criticized that the focus of sustainable regional development remains on the economy (Horlings & Padt, 2011). This development is reflected in definitions such as that of Jovicic et al. (2017, p. 257), and it is clear from these various approaches and explanations that there is no uniform definition for the term sustainable regional development. Following the clarification of terms and the explanation of the dimensions, it is important to address the current challenges of the ecological dimension in focus.

As this paper deals with voluntary carbon credits from peatland rewetting, it is relevant to explain the current challenges in natural climate protection using the example of the ecological pillar within sustainable development. Michelsen et al. (2015) identifies several core problems in the global context that inhibit sustainable development from an ecological perspective. Among other things, soil degradation and desertification lead to a loss of microorganisms, nutritious soils and a build-up of pollutants. Another challenge is the loss of biodiversity and the loss of ecosystem services (Michelsen et al., 2015). In third place, Michelsen et al. (2015) cite water shortages and water pollution. While there is no risk of drinking water shortages in Germany, water management and water-sensitive urban planning are emerging as important in relation to heavy rainfall and climate resilience. Natural climate protection is an important component in dealing with the aforementioned challenges. The aim of this is to increase the climate protection effect by protecting biodiversity on land and in water.

2.4 Voluntary carbon market

As the mandatory carbon market is not a holistic solution for the effective reduction of emissions, the voluntary market is playing an increasingly relevant role (Radermacher, 2018; Streck, 2021). In the voluntary carbon market, specific projects that achieve a reduction in emissions can be financed. The emissions saved through projects can then be sold in the form of certificates as a voluntary contribution to climate protection. Voluntary means that these emission reductions may not be counted towards the obligations arising from the Kyoto Protocol. The voluntary carbon certificates created exist in their own market and are not linked to the mandatory market. In Germany, the voluntary carbon market has also developed in a strong upward trend (Machnik et al., 2022).

2.4.2 Current discussions and criteria

The voluntary market is seen as having the potential to help achieve global climate protection targets. According to the literature, the definition of a high-quality voluntary carbon certificate is determined on the basis of certain criteria (see Moorfutures Standard), whereby the focus varies depending on the standard (Wolters et al., 2018; Borgmann & Gierds, 2023). Despite the rapid rise in sales figures and demand, the

certificates have been criticized. There are doubts about the validity and the real savings of greenhouse gases through the projects (Greenfield, 2023; Cullenward et al., 2023; Deutsche Umwelthilfe e.V., 2023). A fundamental criticism of the voluntary market is that it is largely unregulated and it is therefore up to the project creators to make the methodology as resilient as possible in order to achieve real savings or avoidance of greenhouse gas emissions. The lack of public supervisory authorities is also criticized (Borgmann & Gierds, 2023, Dawes, 2024; Miltenberger et al., 2021). In summary, it can be stated that the market for voluntary carbon credits has the potential to significantly support climate protection (Kreibich & Hermwille, 2021, Radermacher, 2018). Nevertheless, specific legitimate concerns remain about the offsetting and regulation provided.

2.5 Voluntary carbon market in Germany

Voluntary carbon credits have experienced a significant upswing since 2015 and have established themselves as part of emissions trading (Machnik et al., 2022; Alliance for Development and Climate, 2020; Borgmann & Gierds, 2023). The following trends can be identified on the basis of the aforementioned study results:

- There is strong demand for carbon certificates from Germany for the voluntary market.
- The quality of the certificate, which results from the standard above it, is a core component of the purchase decision. The Verified Carbon Standard and Gold Standard are particularly preferred

Despite the low ranking on the demand side, Machnik et al. were able to attribute an important role to the criterion of positive development effects when surveying the supply side (2021).

No clear factors for peatland certificates have yet been developed. However, Joosten et al (2013) have formulated two approaches. Joosten et al. (2013) consider it important for buyers to have confidence in the certificate. Joosten et al. cite two principles for the successful establishment of such a certificate. A regional design: This means that the developers of the certificate, sellers and buyers know each other. Local sales make the certificate appear tangible to customers (Joosten et al., 2013, p. 106). The second point is branding: the aim must be to establish a strong brand. In concrete terms, this means standing for quality and ensuring that the brand is known to continuously develop and evaluate itself (Joosten et al., 2013, p. 106).

2.6 MoorFutures[®]

MoorFutures are carbon credits from peatland rewetting that have been developed for the voluntary carbon market. The procedure for MoorFutures is defined by a specially developed standard and a methodology for projects. Specifically, MoorFutures projects use the MoorFutures standard and methodology to identify suitable open moorland areas. If the area meets the criteria of the standard, the emission reduction achieved through rewetting is calculated. Emission savings are calculated for the entire duration of the project. The

rewetting measures are then implemented, interrupting emissions in the long term. The calculated emission reductions resulting from the project are offered as MoorFutures certificates on the voluntary market to finance the actions already implemented. The project duration is 30 to 50 years. In addition to reducing emissions, the rewetting of peatlands provides other ecosystem services such as substance retention, regional water and climate regulation and an increase in biodiversity (Joosten et al., 2013).

MoorFutures are the only certificates of their kind at the time of their launch in 2011. This uniqueness lies in their own robust infrastructure in terms of analysis, implementation and monitoring (Joosten et al., 2013). The scientific design of the certificates is closely aligned with the Verified Carbon Standard of the Kyoto Protocol and the ISO 14064 and 14065 environmental standards (see Moorfutures Standard).

3 Methodology

The overarching methodology of this work is an embedded single case study and is categorized as qualitative research. Methodologically, it is based on the guidelines of Robert K. Yin's "Case Study research: design and methods" (2003). The form is a single case study, with MoorFutures as the object of investigation. The federal states in which the MoorFutures are sold form the units of analysis within the case (Yin, 2003, p. 40). Data sources in the form of documents and interviews are used for this work (Yin, 2003, p.86).

By developing the context of the case study on the basis of the literature research, the following research questions arose for this thesis:

- What factors lead to the successful sell-off of MoorFutures certificates in Mecklenburg-Western Pomerania, Brandenburg and Schleswig-Holstein?
- What role does the regional context play in the sale of MoorFutures certificates in the respective federal states?
- What role does the regional context play in the implementation of MoorFutures projects in the respective federal states?
- Do MoorFutures contribute to sustainable regional development in the participating federal states?

3.1 interviews

Part of the empirical data for this case study comes from semi-structured interviews. The basis for the guideline and the questions posed in it were taken from the documents considered in the case selection process. A total of five people were requested for interviews, all of whom accepted. Unfortunately, one person proved to be too little involved in the topic during the interview, which made the recording unusable. The audio recordings were transcribed using the AI-supported program Trint and then fully revised in accordance with

GAT2 conventions. For this, the rules of the minimal and basic transcript were used. The four people interviewed are employees or former employees who have or had a steering role in the implementation or sales of MoorFutures projects. The above-mentioned interviewees are named in accordance with their selection for anonymization in the context of this work. Permission to attach the full transcript was denied by all interviewees except Dr. Permien. A full-length interview is therefore attached to this paper. The qualitative content analysis method (Hering & Schmidt, 2014), which is suitable for the design of a case study, is used to utilize the collected data for this paper. This involves an inductive approach in order to structure the content and classify it according to categories (Mayring & Fenzl, 2014).

4 Results

4.1 Climate awareness

The interviewees from Brandenburg and Schleswig-Holstein described a slow start to MoorFutures sales, which then experienced an exponential increase in 2018. For Mecklenburg-Western Pomerania, the increase was described as the constant sell-off of new projects. It turned out that the upswing in sales of MoorFutures certificates was due to an increasing awareness of climate protection in society at large and the political agenda. The Fridays for Future movement that was emerging at the time was mentioned as an example.

Dr. Permien does not attribute the success of the sale of MoorFutures certificates to any single measure. In his opinion, an important factor is the awareness of the moors and the knowledge of the many ecosystem services they provide in a rewetted state.

4.2 Positioning in the political and scientific discourse

The general knowledge about peatlands and their contributions in the form of ecosystem services within the political and scientific discourse plays an important role in the level of awareness and sales of MoorFutures. The prominence of the topic and the benefits of rewetted peatlands have been driven by MoorFutures, according to the interviewees. The MoorFutures partners contributed to this by positioning the certificate in major reports concerning the topic. However, the development and nature of the measures differ between the federal states.

4.3 Regional marketing

Following on from the presence in the scientific and political arena, the marketing of MoorFutures is also active. The characteristics vary from state to state and provide a mixture of different approaches to promote the MoorFutures certificates. For Mecklenburg-Western Pomerania, Dr. Permien emphasizes that MoorFutures are well known and that customers seek them out to buy certificates. It can therefore be observed that the Ministry of the Environment is in high demand for its MoorFutures and that customers approach it independently to purchase certificates. In Schleswig-Holstein, the situation is different. Ms. Marggraf

describes that sales and marketing have developed from the very beginning and that they have used many different formats to make MoorFutures known in their federal state.

Brandenburg has also developed several marketing practices since MoorFutures began in the state. In order to make MoorFutures known to potential buyers, the area agency relies on organizing and sponsoring regional events such as concerts. All interviewees denied the existence of a standard communication plan for MoorFutures. One exception is the prepared materials that Ms. Marggraf makes available to the companies.

4.4 Motivation of buyers

The question of why private individuals or companies buy MoorFutures certificates was answered several times, and a variety of reasons were given. It was emphasized that MoorFutures enjoys a high reputation among its customers, which is strengthened by its regional affiliation.

The development of customers buying MoorFutures certificates in Brandenburg and Schleswig-Holstein shows that private individuals initially bought the most certificates and that companies later made up the majority. The regional connection is important to customers, which is evident in different ways: According to P1, a strong regional and supportive context can be identified in Brandenburg. Local communities and tourism associations are very interested in acquiring MoorFutures from Brandenburg. In Mecklenburg-Western Pomerania, various customer purchase motivations can also be observed. When it comes to sales, Dr. Permien has observed that customers are not divided according to certificate type and that purchase motivations and decisions are independent. He says that companies and private individuals both buy certificates. He cites a certificate as a gift for another person as a reason for private individuals. Another reason for buying MoorFutures is that they feel connected to peatland-rich landscapes because of their origins and want to preserve them through their purchase.

Certain motives for purchasing MoorFutures were also identified for Schleswig-Holstein. According to Mrs Marggraf, companies do not want to support projects that are far away, that they cannot see and that have no connection to them. It is important to them to involve their employees and visit the project sites in the form of a company outing. Private individuals share the same desire to support projects in the form of certificates that they can visit themselves. In this way, the projects become part of local tourism and Mrs Marggraf is asked by customers for maps for hikes and how best to reach the project areas.

4.5 Networks and structures

An important aspect for MoorFutures that emerged from the interviews and the documents are the networks and structures that the projects and the cooperation between the federal states create. The different actor structures of the respective MoorFutures federal states can be observed. MoorFutures uses the partner

structure model. This model has different actors depending on the federal state. In Mecklenburg-Western Pomerania, MoorFutures is sold by the ministry and the projects are implemented by various stakeholders such as the state forestry department, the Spatial agency or an engineering firm. The scientific authority is the University of Greifswald. In Brandenburg and Schleswig-Holstein, on the other hand, the land and compensation agencies are responsible for the sale and development of new projects. They can develop new projects and generate MoorFutures independently of the ministry. The ministries keep the compensation-register for the certificates sold, and Dr. Permien attributes greater flexibility to this organization of sales and implementation via the compensation and land agencies. In comparison to the ministry, where the entire approval hierarchy must be passed through if a project is to be initiated, the area agencies can set up projects without ministerial confirmation. According to Dr. Permien, they are therefore quicker in developing projects

There are two cross-state committees in which the stakeholders of the MoorFutures states come together. There is the project working group (PAG) and the scientific advisory board. The interviews revealed that this is an important meeting point for discussing the current situation and the development of MoorFutures. The PAG discusses ongoing and completed projects and is characterized by a lively exchange between the participating actors. One person is delegated to each PAG to take care of the project management of MoorFutures in the respective federal state. P1 also sees this as support for new colleagues, as they can learn from experienced project managers and discuss challenges. It offers him a platform to advance his own work through the experience of others. P1 sees the heterogeneous structures of the actors, who are nevertheless pursuing the same goal, as a good basis for mutual exchange.

The PAG fulfills an additional function to protect the MoorFutures brand from misuse by third parties offering peatland protection under the MoorFutures name. Dr. Permien talks about interested parties who operate peatland protection under the name MoorFutures without conforming to the standards or quality criteria. Depending on the federal state, this requires coordination between the partners. The second body within the MoorFutures construct is the scientific advisory board, which consists of the respective scientific institutions of the federal states. Its task is to validate new projects and to take care of the further scientific development of MoorFutures and its methodology. In terms of networks and structures, the land agency and the compensation agency should be mentioned. As already mentioned, they are seen as having flexibility in terms of securing new projects and in decision-making. P2 mentions the personnel flexibility for peatland futures and ecopool projects as well as the tax component. When asked about the land agency, P1 refers to the existing expertise that the agency has already acquired through ecopool projects.

4.6 Land acquisition and cooperation

According to the interviewees, one issue that influences the present and future of MoorFutures certificates in Brandenburg and Schleswig-Holstein is securing land and the associated acquisition. In the exchange on the future of MoorFutures, P2, P1 and Ms. Marggraf mentioned the problem of securing new areas for rewetting. Instead of buying land, the foundation is beginning to offer alternatives with the compensation agency. By cooperating with the owners, it is possible to acquire rewetting rights for the land without having to buy the land outright and thus implement nature conservation measures. With this type of cooperation, the foundation and agency are taking a new approach to obtaining additional suitable areas. In Brandenburg, on the other hand, the situation is different. The land agency does not own any land and cooperates with the landowners. Due to this situation, it is dependent on entering into discussions with owners and seeking cooperation in every project. P1 emphasizes that the acquisition of land is time-consuming due to the long duration.

4.7 Dealing with concerns during sales and implementation

The MoorFutures stakeholders are confronted with concerns during their efforts to sell certificates or when implementing and developing new project areas. In the course of the projects and sales, they have developed their own approaches to convince customers and landowners of their rewetting projects. In addition to trying to convince customers of the added value, the strategy is to allay concerns. It can be observed that the convincing points for the owners come less from the discourse on the necessity of climate protection and its contribution than from the tangible and concrete benefits they receive from MoorFutures projects. Securing the project areas is a major challenge for the agencies in Brandenburg and Schleswig-Holstein. The landowners' attitude plays a large part in this. The case of Schleswig-Holstein shows how local political change can influence the progress of projects. Eliminating prejudices or concerns about peatlands and rewetting is also relevant when dealing with customers. Dr. Permien and Ms. Marggraf have developed their own approaches in dealing with such situations. In this context, their aim is to arouse interest in peatland habitats. She achieves this by emphasizing the tangible contributions and benefits that peatlands provide.

4.8 Fulfillment of the MoorFutures criteria

The reports of the respective projects list all points relevant to the criteria and show how they were implemented in the respective federal states.

As mentioned in the interviews, all MoorFutures projects to date have been financed without additional support and have run independently of state programs. All projects with available reports are scheduled for the maximum term of 50 years (see appendices) With regard to measurability and verifiability, all projects use

the peer-reviewed GEST procedure and justify project-specific influences that are checked in the subsequent monitoring. With regard to the criterion of conservatism, it should be noted that the projects do not sell 30% of emissions as standard. This is intended to serve as a buffer to cover risks and misjudgements over the long period of the projects. Trustworthiness is a criterion that is ensured by correct registration and the maintenance of the compensation register. This task falls to the respective environment ministries of the countries. With regard to sustainability, it is mentioned in each case that the wetted areas have no negative impact on the surrounding socio-economic conditions due to their small size. The permanence of the projects is ensured by the fact that the areas are owned by an institution under public law. The second aspect is that MoorFutures projects are designed to be permanent for 100 years, so that the emission reductions are effective after 100 years.

5 Analysis

5.1 Success factors

The first factor mentioned by all interviewees was the significant increase in sales in 2018 and the following years. This is attributed to the emergence of the climate movement, which was brought into the wider society by the Fridays for Future movement. Schleswig-Holstein recorded a significant increase in sales. In Mecklenburg-Western Pomerania, certificates have been regularly sold out since 2018. The same applies to Brandenburg. Without being able to track the individual sales figures in the federal states, the uniform explanation given for the increase in sales figures can be used as an indicator. As can be seen in the chart for developments in the sales volumes of voluntary carbon credits in the German and global market, this trend can also be tracked. It should be noted that the climate movement mentioned by the interviewees only began in August 2018, which explains the shift in the increase in sales figures to 2019.

The second factor, which is related to the first, is the strategic positioning of MoorFutures in relevant reports and in the scientific discussion on natural climate protection through ecosystem services.

The extensive efforts and various marketing strategies that the MoorFutures stakeholders pursued before the aforementioned upswing should also be emphasized. In Brandenburg and Schleswig-Holstein, it is also evident how marketing has attracted local businesses, municipalities and tourism associations and won them as a steady clientele. The desire to support a local project is a motivating factor for MoorFutures' customers and creates a stronger connection to the brand. MoorFutures is a regional certificate that also sells nationally, but has a loyal customer base due to its local connection.

A significant connection can be made between the preferences of buyers observed in the theoretical framework from the market analysis and what MoorFutures offers with its standard and unique selling points (see appendix). The MoorFutures standard shows that MoorFutures, as its own quality standard, is based on the standards rated highest by customers (Machnik et al., 2021, pp. 24-25). MoorFutures' reputation and

seriousness can be demonstrated by the awards it has received and the public transparency of its documentation. It is important to emphasize here that in the case of MoorFutures, as can be seen in the criterion of trustworthiness, the compensation registers are kept by the ministries in public hands. In comparison to the criticism of voluntary carbon certificates and their lack of official supervision, which has been expressed several times in the literature, the structure of MoorFutures can be seen as positive. This can be demonstrated by the project structure using the example of Schleswig-Holstein through the link between the Foundation for Nature Conservation and the compensation agency. In summary, it can be observed that MoorFutures has benefited from the increasing climate awareness among the general public. Furthermore, they can achieve visibility in the scientific community through continuous and relevant positioning of their brand. The regional design of their marketing strategies can also be seen as a success factor.

5.2 Role of the regional context for the sale of MoorFutures

It turns out that, as already mentioned in the success factors, the regional reference of the certificates is a decisive factor for the demand for MoorFutures. The strong demand can be observed for all three MoorFutures federal states. However, the approaches to sales differ. All MoorFutures federal states are peat-rich countries. As has been shown, this favors tourism. All MoorFutures partners have developed their own approaches to marketing. However, Mecklenburg-Vorpommern is the only state where the ministry controls sales. In the case of Dr. Permien, it can be observed that sales are made by customers specifically requesting certificates without him having to actively recruit them. In Brandenburg and Schleswig-Holstein, the sale and marketing of certificates is driven by proactive methods. The range of approaches used is significantly higher.

With regard to the criteria from Joosten et al. (2013, p. 106), it can be seen that the introduction of the certificate was implemented in exactly the same way. This means building proximity to customers in order to sell an interesting story. At the same time, the actors involved in selling MoorFutures are also responsible for raising public awareness of the peatland habitat. The sale of the certificates therefore also includes an educational component. The tangibility of the projects is also a given and is desired by the projects' customers. According to Joosten et al. (2013), there is little distance between customers and sellers. The MoorFutures stakeholders take advantage of this and focus their marketing projects on personal relationships.

5.3 Role of the regional context in implementation

An important factor for differing regional circumstances is the different staffing and distribution of tasks of the MoorFutures partners within the partner structure model. The differences can be seen most clearly in the agencies and the ministry.

In Brandenburg, the development and implementation of MoorFutures projects is strongly influenced by regional conditions. The position of the land agency plays a role here. It does not own land and is therefore dependent on cooperation in order to realize projects. The additional challenge that P1 faces in its position can prove to be an advantage in the longer term. With the described situation on the land market, buying land, as the Foundation for Nature Conservation in Schleswig-Holstein has done, is increasingly difficult, which has forced them to switch to cooperations.

What can be classified as a regional advantage in the implementation is the division of tasks and responsibilities between the nature conservation foundation and the compensation agency. Due to the long existence of the foundation, it was already able to benefit from earlier regional developments such as the demise of farms in the 1990s in the name of nature conservation. In addition, both institutions benefit from each other: in a structural sense through the economic orientation of the agency and through the expertise and status of the foundation. As described by P1, the attitude that the owners or farmers have towards climate protection is an important factor. As described by P1, a project can be significantly accelerated if there is acceptance and support for the rewetting project. Accordingly, the discourse of acceptance for climate protection must be supplemented by the needs of those affected, which in the case of P1 is financial benefits, continuity and security for local residents. In Mecklenburg-Vorpommern, Dr. Permien reports on a different approach. In summary, it can be observed that the MoorFutures federal states pursue the same goal under one standard and have to face different challenges due to regional circumstances. These differences ensure continuous further development. By communicating the challenges experienced in the transnational groups, transnational approaches and solutions can be developed from regional problems.

5.4 Contribution to the regional sustainable development of the federal states

The scope of MoorFutures is diverse. To answer the question of how MoorFutures contributes to sustainable regional development in the federal states, the aspects of the ecological dimension should be noted first. The rewetting of the project areas ensures long-term climate protection. In addition to preventing and fixing emissions, they protect against drought, provide material retention and regulate the local water balance. In addition to the project areas themselves, this also affects neighboring areas. The time frame specified by the peatland futures standard is also significant: a project duration of 50 years with a requirement that the effects must still be active after 100 years. This shows that the focus is not only on ecosystem services but also on the long-term nature of the efforts. However, it should be noted that the impact on the federal states is limited due to the small project areas in relation to the state area.

MoorFutures can also be identified as contributing to the dimension of economic sustainability. On the one hand, the aspect of long-term agreements and planning security that MoorFutures can offer an agricultural business is important. Even if widely applicable forms of management for waterlogged areas are still being

developed and piloted, the offer of MoorFutures can increase the willingness of partner farms to make the switch. This approach combines the ecological dimension with a sustainable form of economic development. The aspect of tourism, which was highlighted during the interviews, particularly in Schleswig-Holstein, also plays an important role. The strong interest of MoorFutures buyers in visiting the project areas and making them their hiking destinations can be interpreted as a contribution to the local economy through tourism.

In terms of social sustainability, the ecosystem services of peatlands and their contribution to moderating the local climate must be emphasized. This contributes to the overall quality of life of neighboring communities. Perhaps the greatest contribution that MoorFutures makes to the development of the federal states is education for sustainable development. As already mentioned several times, the MoorFutures actors carry out educational work about the peatland habitat through their activities and break down stigmas. In addition to talking about peatlands, they discuss and provide information about climate change within a scientific framework. MoorFutures also ensures continuous development within its own structures in the form of transnational committees and their cooperation. In this way, an exchange takes place on regional approaches and solutions that can contribute to supra-regional development.

5.5 Limitations

Like all research findings, the results of this master's thesis are subject to certain limitations. This thesis achieved a variation of interviewees with at least one person from each MoorFutures federal state. A higher number of interviewees within MoorFutures would have made it easier to verify individual statements. For a largely unbiased position, interviewing the customer side would have been enriching. By addressing several unforeseen aspects, some individual aspects were given more space than those of the intended order of questions. As a result, a greater variation of answers could be obtained, which, however, impairs the comparability of the interviews. Due to the limited scope of this work, it was not possible to examine multiple carbon credits. An independent perspective, for example from the customer side, would be of interest for examining specific aspects.

6 Conclusion

The aim of this work was to identify success factors for the sale of MoorFutures certificates and how MoorFutures affects the regional sustainable development of the respective federal states. It also aimed to investigate the influence of the regional context on the sale of certificates and the implementation of projects. Natural climate protection through peatlands is an important factor in achieving global and national climate targets. Voluntary carbon certificates such as MoorFutures provide additional support. As a successfully established brand, MoorFutures has achieved many successes since its foundation. As part of this work, several factors for the successful sell-out of MoorFutures projects were identified. On the one hand, MoorFutures has benefited from rising climate awareness since 2018, for example through movements such as Friday for

Future, which has increased the attractiveness of offsetting through certificates. However, the broad attention is also due to the strategic positioning of the brand and the concept in important reports and the active contributions to the topic area through publications. MoorFutures has deliberately positioned itself as a regional certificate and this is also reflected in the marketing activities of the actors in the respective federal states. They can therefore rely on the strong support and demand they have built up among private individuals and local companies. The analysis of customer preferences for voluntary carbon credits has shown that the MoorFutures profile meets the most important criteria. Due to the high-quality standards combined with the regional approach, the projects address the needs of the demand side. In addition, they fulfill the link to institutional supervision desired by many critics through the management of compensation registers by the state ministries. These factors are based on efforts to establish and sell MoorFutures, which are implemented differently in each federal state. The influences of the regional context on the sale of MoorFutures revealed that the federal states differ in their approaches. In Mecklenburg-Western Pomerania, MoorFutures enjoy such a high reputation that no active marketing is necessary in the current position due to the high demand. Schleswig-Holstein, on the other hand, uses a variety of methods to promote sales. These include targeted presentations at companies, information stands at trade fairs or other events and facilitating guided tours of the areas. They also offer company-specific informative texts and videos for their own communication. They also promote visits to the MoorFutures project areas and link these to popular hiking trails. In Brandenburg, marketing focuses on organizing and sponsoring local concerts and creating videos about MoorFutures projects.

In terms of the influence of the regional context on implementation, the focus is on land acquisition and cooperation with landowners. While securing land in Mecklenburg-Western Pomerania is straightforward, it is a key challenge for the stakeholders in Brandenburg and Schleswig-Holstein. While Brandenburg had to rely on cooperation rather than the purchase of land from the outset, the compensation agency in Schleswig-Holstein found itself in the position of having to switch from purchase to cooperation. This was identified as the greatest challenge with regard to the future of MoorFutures in both federal states.

This master's thesis has provided an insight into the topics of voluntary carbon credits from peatland rewetting and sustainable regional development, which could be explored in greater depth in further research. Investigating the same questions with a larger number of interviews would already provide a clearer comparison of the aspects mentioned. Investigating the customer side would be an opportunity to verify the preferences found and, if necessary, to supplement them. In this way, the understanding of customer needs could be expanded in order to discuss targeted marketing strategies and further develop the sale of MoorFutures. In addition, the challenge of acquiring land also provides a basis for a more detailed survey of owners and farmers and a perspective for the development of possible solutions.

7 Bibliography

- Abubakar, I. R. (2017). Access to Sanitation Facilities among Nigerian Households: Determinants and Sustainability Implications. *Sustainability*, 9(4), 547.
<https://doi.org/10.3390/su9040547>
- Allianz für Entwicklung und Klima. (2020). Aktueller Stand des freiwilligen Treibhausgas-Kompensationsmarktes in Deutschland. In *STUDIE*. https://perspectives.cc/wp-content/uploads/2023/10/Alliance_for_Development_and_Climate.pdf
- Ausgleichsagentur Schleswig-Holstein GmbH. (o. D.). Projektdokument MoorFutures Königsmoor (Schleswig-Holstein). In MoorFutures Downloads. Abgerufen am 14. Mai 2024, von <https://www.moorfutures.de/downloads/>
- Baur, N. & Blasius, J. (2014). *Handbuch Methoden der empirischen Sozialforschung*. Springer VS.
- BMUV, Küchler-Krischun, J. & Walter, A. M. (2007). Nationale Strategie zur biologischen Vielfalt. In *Nationale Strategie zur biologischen Vielfalt*. https://www.bmuv.de/fileadmin/Daten_BMU/Pool/Broschueren/nationale_strategie_biologische_vielfalt_2015_bf.pdf
- Borgmann, M. & Gierds, J. (2023). Was ist der freiwillige Kohlenstoffmarkt – und welchen Beitrag leistet er für den Klimaschutz Impuls des Akademienprojekts „Energiesysteme der Zukunft“. *Acatech – Deutsche Akademie der Technikwissenschaften E. V. (Federführung), Förderkennzeichen 03EDZ2016*. https://www.leopoldina.org/fileadmin/redaktion/Publicationen/Nationale_Empfehlungen/ESYS_Impuls_Freiwilliger_Kohlenstoffmarkt.pdf
- Botha, B., Alexandru, B. M. & Mariana, C. (2020). Innovative Calculation Model for Evaluating Regional Sustainable Development. *Economic Computation And Economic Cybernetics Studies And Research*, 54(3/2020), 5–24. <https://doi.org/10.24818/18423264/54.3.20.01>
- Brundtland, G. H. (1987). Our Common Future: Report of the World Commission on Environment and Development. In *United Nations* (UN-Dokument A/42/427). <http://www.un-documents.net/ocf-ov.htm>

- Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz (BMUV),
 BMUV, Referat N III 2, Kugler, S., Wichmann, W., Stiftung für Mensch und Umwelt &
 Lemke, S. (2023). Aktionsprogramm Natürlicher Klimaschutz. In *Aktionsprogramm Natürlicher Klimaschutz*. https://www.bmuv.de/fileadmin/Daten_BMU/Pool/Broschueren/ank_publikation_bf.pdf#page=12
- Cerin, P. (2006). Bringing economic opportunity into line with environmental influence: A discussion on the Coase theorem and the Porter and van der Linde hypothesis. *Ecological Economics*, 56(2), 209–225. <https://doi.org/10.1016/j.ecolecon.2005.01.016>
- Cullenward, D., Badgley, G. & Chay, F. (2023). Carbon offsets are incompatible with the Paris Agreement. *One Earth*, 6(9), 1085–1088. <https://doi.org/10.1016/j.oneear.2023.08.014>
- Dawes, A. (2024, 2. Februar). What’s Plaguing Voluntary Carbon Markets? *Center For Strategic And International Studies*. <https://www.csis.org/analysis/whats-plaguing-voluntary-carbon-markets>
- Deutsche Umwelthilfe e.V. (2023). Kritik am Handel mit Emissionsgutschriften. In *Hintergrundpapier*. https://www.duh.de/fileadmin/user_upload/download/Projektinformation/Verbraucher/Klimaneutralit%C3%A4t/Hintergrundpapier_Emissionsgutschriften_DUH_231221.pdf
- Dühr, S. (2005). Spatial policies for regional sustainable development: A comparison of graphic and textual representations in regional plans in England and Germany. *Regional Studies*, 39(9), 1167–1182. <https://doi.org/10.1080/00343400500389885>
- Europäische Kommission. (2020). EU-Biodiversitätsstrategie für 2030. In *EUR-Lex (COM(2020) 380 final)*. Europäische Kommission. <https://eur-lex.europa.eu/legal-content/DE/TXT/?uri=celex%3A52020DC0380>
- Flick, U., Von Kardorff, E. & Steinke, I. (2000). *Qualitative Forschung: ein Handbuch*.

- Gassner, J. (2018). Das Pariser Klimaschutzabkommen und die Zukunft der freiwilligen CO₂-Kompensation. In *Springer eBooks* (S. 236–243). https://doi.org/10.1007/978-3-658-20606-2_37
- Goodland, R. & Daly, H. (1996). Environmental Sustainability: Universal and Non-Negotiable. *Ecological Applications*, 6(4), 1002–1017. <https://doi.org/10.2307/2269583>
- Gray, R. (2010). Is accounting for sustainability actually accounting for sustainability. . .and how would we know? An exploration of narratives of organisations and the planet. *Accounting, Organizations And Society*, 35(1), 47–62. <https://doi.org/10.1016/j.aos.2009.04.006>
- Greenfield, P. (2023, 30. Januar). Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows. *The Guardian*. <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>
- Hajian, M. & Kashani, S. J. (2021). Evolution of the concept of sustainability. From Brundtland Report to sustainable development goals. In *Elsevier eBooks* (S. 1–24). <https://doi.org/10.1016/b978-0-12-824342-8.00018-3>
- Hauff, M. (2021). *Nachhaltige Entwicklung: Grundlagen und Umsetzung*. Walter de Gruyter.
- Haughton, G. & Counsell, D. (2004). Regions and sustainable development: regional planning matters. *Geographical Journal*, 170(2), 135–145. <https://doi.org/10.1111/j.0016-7398.2004.00115.x>
- Heisler, K. (2014). Sustainable regional development. In *Springer eBooks* (S. 6513–6514). https://doi.org/10.1007/978-94-007-0753-5_2954
- Helfferich, C. (2014). Leitfaden- und Experteninterviews. In *Springer eBooks* (S. 559–574). https://doi.org/10.1007/978-3-531-18939-0_39
- Hering, L. & Schmidt, R. J. (2014). Einzelfallanalyse. In *Springer eBooks* (S. 529–541). https://doi.org/10.1007/978-3-531-18939-0_37

- Hirschelmann, S., Tanneberger, F., Wichmann, S., Reichelt, F., Hohlbein, M., Couwenberg, J., Busse, S., Schröder, C. & Nordt, A. (2020). Moore in Mecklenburg-Vorpommern im Kontext nationaler und internationaler Klimaschutzziele - Zustand und Entwicklungspotenzial. In *Greifswald Moor Centrum*. Abgerufen am 16. Juli 2024, von https://www.greifswald-moor.de/files/dokumente/Infopapiere_Briefings/Faktensammlung_MooreMV_final_Sept%2021_korr2.pdf
- Horlings, I. & Padt, F. (2011). Leadership for Sustainable Regional Development in Rural Areas: Bridging Personal and Institutional Aspects. *Sustainable Development*, 21(6), 413–424. <https://doi.org/10.1002/sd.526>
- Joosten, H., Couwenberg, J., Schäfer, A., Tanneberger, F., Brust, K., Gerner, A., Wahren, A., Permien, T., Holsten, B. & Trepel, M. (2013). *MoorFutures: Integration von weiteren Ökosystemdienstleistungen einschließlich Biodiversität in Kohlenstoffzertifikate ; Standard, Methodologie und Übertragbarkeit in andere Regionen: Bd. BfN-Skripten 350*. Bundesamt für Naturschutz.
- Jovovic, R., Draskovic, M., Delibasic, M. & Jovovic, M. (2017). The concept of sustainable regional development – institutional aspects, policies and prospects. *Journal Of International Studies*, 10(1), 255–266. <https://doi.org/10.14254/2071-8330.2017/10-1/18>
- Kleine, S. & Permien, T. (2024). Ökowertpapiere und nachhaltige Bioökonomie – Widerspruch oder Chance? In *Springer eBooks* (S. 369–380). https://doi.org/10.1007/978-3-658-42358-2_23
- Klimaschutz, B.-. B. F. W. U. (o. D.-a). *Freiwilliger Kohlenstoffmarkt*. <https://www.bmwk.de/Redaktion/DE/Dossier/Klimaschutz/freiwilliger-kohlenstoffmarkt.html>
- Klimaschutz, B.-. B. F. W. U. (o. D.-b). *Freiwilliger Kohlenstoffmarkt*. <https://www.bmwk.de/Redaktion/DE/Dossier/Klimaschutz/freiwilliger-kohlenstoffmarkt.html>

- Kolk, A. (2016). The social responsibility of international business: From ethics and the environment to CSR and sustainable development. *Journal Of World Business*, 51(1), 23–34.
<https://doi.org/10.1016/j.jwb.2015.08.010>
- Kreibich, N. & Hermwille, L. (2021). Caught in between: credibility and feasibility of the voluntary carbon market post-2020. *Climate Policy*, 21(7), 939–957.
<https://doi.org/10.1080/14693062.2021.1948384>
- Kreibich, N. & Schulze-Steinen, M. (2023). The Voluntary Carbon Market: Between Private Governance and Public Regulation. *Zeitschrift für Außen- und Sicherheitspolitik*, 16(3), 251–262.
<https://doi.org/10.1007/s12399-023-00954-8>
- Lefcheck, J. S., Byrnes, J. E. K., Isbell, F., Gamfeldt, L., Griffin, J. N., Eisenhauer, N., Hensel, M. J. S., Hector, A., Cardinale, B. J. & Duffy, J. E. (2015). Biodiversity enhances ecosystem multifunctionality across trophic levels and habitats. *Nature Communications*, 6(1).
<https://doi.org/10.1038/ncomms7936>
- Luthardt, V., Schöps, A., Dießelberg, F. & Guilbert, S. (2013). Beurteilung der Klimarelevanz von Vernässungsmassnahmen im Projektgebiet Rehwiese/Fließgraben bei Oranienburg. In Moorfutures Downloads. Abgerufen am 15. Mai 2024, von <https://www.moorfutures.de/downloads/>
- Machnik, D., Schambil, K. & Tänzler, D. (2022). *Infopapier zur Marktanalyse Freiwillige Kompensation 2021* (3720 42 505 0). https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/cc_22-2022_infopapier_zur_marktanalyse_freiwillige_kompensation_2021.pdf
- Marynych, T. (2017). Empirical assessment of long-term aspects of sustainable regional development. *Ekonomičnij časopis-XXI*, 166(7–8), 86–90. <https://doi.org/10.21003/ea.v166-17>
- Mayring, P. & Fenzl, T. (2014). Qualitative Inhaltsanalyse. In *Springer eBooks* (S. 543–556).
https://doi.org/10.1007/978-3-531-18939-0_38

- Mazza, P. (2021). Concepts of Sustainable Development; a Literature Review and a Systematic Framework for Connecting the Role of Education with the Sustainable Development Goals (SDGs). *International Journal Of Humanities, Social Sciences And Education*, 8(8).
<https://doi.org/10.20431/2349-0381.0808009>
- Meadows, D. (1972). *The Limits to growth: A report for the Club of Rome's Project on the Predicament of Mankind* (2. Aufl.). Universe Books.
- Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, 5(1).
<https://doi.org/10.1080/23311886.2019.1653531>
- Michelsen, G., Adomßent, M., Barth, M., Bernert, P., Danner, M., Fischer, D. & Hetze, K. (2015). Grundlagen einer nachhaltigen Entwicklung. In *DBU- Deutsche Bundesstiftung Umwelt* (Nr. 30564/01). DBU- Deutsche Bundesstiftung Umwelt.
<https://www.dbu.de/OPAC/ab/DBU-Abschlussbericht-AZ-30564-Studienbrief1.pdf>
- Miltenberger, O., Jospe, C. & Pittman, J. (2021). The Good Is Never Perfect: Why the Current Flaws of Voluntary Carbon Markets Are Services, Not Barriers to Successful Climate Change Action. *Frontiers in Climate*, 3. <https://doi.org/10.3389/fclim.2021.686516>
- Ministerium für Klimaschutz, Landwirtschaft, ländliche Räume und Umwelt. (2023, 18. August). *MoorFutures erhalten erneut Auszeichnung durch die Vereinten Nationen* [Pressemeldung]. Abgerufen am 24. Juni 2024, von <https://www.regierung-mv.de/Landesregierung/lm/Aktuell/?id=193772&processor=processor.sa.pressemitteilung>
- Mishan, E. J. (1967). *The cost of economic growth*.
- Neubert, V. K. (2018, 15. Mai). *Das Moorhelden-Konzert mit dem Keimzeit Akustik Quintett*.
<https://moorfutures-bb.de/das-moorhelden-konzert-mit-dem-keimzeit-akustik-quintett/>

- Permien, T. (o. D.-a). Projektdokument MoorFutures Gelliner Bruch (Mecklenburg-Vorpommern).
In MoorFutures Downloads. Ministerium für Landwirtschaft und Umwelt Mecklenburg-Vorpommern. Abgerufen am 13. Mai 2024, von <https://www.moorfutures.de/downloads/>
- Permien, T. (o. D.-b). Projektdokument MoorFutures Polder Kieve (Mecklenburg-Vorpommern). In MoorFutures Downloads. Ministerium für Landwirtschaft und Umwelt Mecklenburg-Vorpommern. Abgerufen am 13. Mai 2024, von <https://www.moorfutures.de/downloads/>
- Permien, T. (o. D.-c). Projektdokument MoorFutures Kamerunwiese (Mecklenburg-Vorpommern).
In MoorFutures Downloads. Ministerium für Landwirtschaft und Umwelt Mecklenburg-Vorpommern. Abgerufen am 13. Mai 2024, von <https://www.moorfutures.de/downloads/>
- Pigou, A. C. (1920). *The Economics of Welfare*. <http://ci.nii.ac.jp/ncid/BA06951880>
- Pike, A., Rodriguez-Pose, A. & Tomaney, J. (2007). What Kind of Local and Regional Development and for Whom? *Regional Studies*, 41(9), 1253–1269.
<https://doi.org/10.1080/00343400701543355>
- Radermacher, F. J. (2018). *Der Milliarden-Joker: Wie Deutschland und Europa den globalen Klimaschutz revolutionieren können*.
- Selting, M., Auer, P., Barth, D., Bergmann, J., Bergmann, P. & Couper-Kuhlen, E. (2009). Gesprächsanalytisches Transkriptionssystem 2 (GAT 2). *Gesprächsforschung - Online-Zeitschrift Zur Verbalen Interaktion*, 353–402(Ausgabe 10). <http://www.gespraechsforschung-ozs.de/>
- Spangenberg, A. (2011). Die Kartierung der Vegetation eines Moores, das meist mehrere Standorttypen umfasst, ermöglicht somit über die flächenbezogene Hochrechnung der Emissionen der Einzelstandorte die Erstellung einer Gesamtbilanz für. In *Moorwissen.de*. Institut für Dauerhaft Umweltgerechte Entwicklung von Naturräumen der Erde (DUENE e.V.).
https://www.moorwissen.de/files/doc/publikationen/Spangenberg_%282011%29_Ein-sch%C3%A4tzung_der_Treibhausgasrelevanz_bewaldeter_Moorstandorte_in_MV.pdf

- Streck, C. (2021). How voluntary carbon markets can drive climate ambition. *Journal Of Energy & Natural Resources Law*, 1–8. <https://doi.org/10.1080/02646811.2021.1881275>
- TEEB. (2014). TEEB – Die Ökonomie von Ökosystemen und Biodiversität für kommunale und regionale Entscheidungsträger. In *Umweltbundesamt*. Heidi Wittmer und Haripriya Gundimeda. https://www.teebweb.org/wp-content/uploads/2014/09/TEEB_furlokaleund-regional_entscheidungstager_2014.pdf
- Ullendahl, K., Hirschelmann, S. & Abel, S. (2023). Treibhausgas-Emissionen der moorreichen Bundesländer und die Rolle der organischen Böden. In *Greifswald Moor Centrum*. Abgerufen am 17. Juli 2024, von https://www.greifswaldmoor.de/files/dokumente/Infopapiere_Briefings/202305_Faktenpapier%20Emissionen%20Bundesl%C3%A4nder_final%20_korr.pdf
- Witte, T. (2024, 9. Januar). *Bodendegradation: Wir brauchen mehr Bodenschutz | Heinrich-Böll-Stiftung*. Heinrich-Böll-Stiftung. <https://www.boell.de/de/2024/01/09/bodendegradation-wir-brauchen-mehr-bodenschutz>
- Wolters, S., Schaller, S., Götz, M., Böther, S. & Gather, C. (2018). Freiwillige CO2-Kompensationen durch Klimaschutzprojekte. In *Umweltbundesamt*. Umweltbundesamt. Abgerufen am 28. Juli 2024, von https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/ratgeber_freiwillige_co2_kompensation_final_internet.pdf
- Von Haaren, C. & Albert, C. (2016). Ökosystemleistungen in ländlichen Räumen: Grundlage für menschliches Wohlergehen und nachhaltige wirtschaftliche Entwicklung.
- Yin, R. K. (2003). *Case study research: Design and Methods*. SAGE.