LUND UNIVERSITY
School of Economics and Management

Master programme in Innovation and Spatial Dynamics

The role of Policy Mix in Cross-border Regional Innovation System Integration

Jonas Heiberg
jonas.heiberg.3856@student.lu.se

Policy targeting the integration of cross-border regional innovation systems (CBRIS) plays a crucial role in terms of reaching the European Union's cohesion goals. So far, little research has been done on how policy structures shape the integration of cross-border regional innovation systems. Applying Rogge and Reichardt's (2016) policy mix for sustainability transitions concept to a cross-border context this thesis investigates the policy structure of the German-Danish Sønderjylland-Schleswig cross-border region. It explores how policy elements and processes foster or hinder the integration of the CBRIS, departing from a case study of an implemented cross-border cluster instrument for the cleantech industries that are emphasized in regional strategies on both sides of the border.

The thesis finds policy structures to be at most weakly integrated, contrasting results from Makkonen et al. (2016). The weak integration is reflected by a lack of consistency of cross-border policy elements caused by incoherent policy-making, which in turn results in a low credibility and comprehensiveness of the mix. Based on these findings, the thesis develops suggestions for possible short-term and long-term policy adjustments.

The cross-border policy-mix framework developed in this study proves to be a valuable tool for future studies to analyse policy structure integration in a CBRIS and, particularly, for mixed-method research designs focusing on several dimensions of integration.

Keywords: CBRIS, policy mix, policy structures, cleantech industry, cluster instruments

EKHS31
Master thesis, First Year (15 credits ECTS)
June 2017
Supervisor: Teis Hansen, Johan Miörner
Examiner: Mikhail Martynovich
Word Count: 16.865 (including in-text citations)

Acknowledgements

Thanks to

Teis Hansen
Johan Miörner
Patrick Chojnowski
Micheal Igoe
and
Christian Boysen

for your kind support

Abbreviations

CBRIS= Cross-border regional innovation system
FCI = Furgy Clean Innovation
RIS = Regional innovation system
RSD = Region Syddanmark
SH = Schleswig-Holstein
SJSW= Sønderjylland-Schleswig

Table of Contents

List of Tables

List of Figures

1 Introduction

With a rising number of border regions in the European Union since the end of the Soviet Union and the strengthening of regional governance capabilities across Europe, the importance and relevance of cross-border regions for economic development and innovation has increased in recent decades (Trippl, 2010). Since the 2000s, cross-border regional policy cooperation has been established in different degrees of formalisation between most European border regions, to a large extend facilitated by the emergence of the European Union's INTERREG programmes in the 1990s (Perkmann, 2003). Also today, the European Union emphasises the cohesion of its territories, including cross-border regions, labelled as transnational cooperation (EC, 2014).
The overarching goal of the European Union's cohesion policy, financed e.g. through their structural funds, is to stimulate innovation and regional capabilities to reach similar conditions for growth and an alignment of living standards in European regions. While there is a large amount of studies on policy in national or regional innovation systems from different scientific disciplines like economics, innovation studies, economic geography or policy analysis, studies of policy structures in cross-border regions remain relatively rare (Makkonen and Rohde, 2016). Policy structures are understood here as the complex mix of instruments, strategies, their interactions and processes related to them that address innovation in different industries of a cross-border region. An understanding of how these policy structures hamper or facilitate the integration of a cross-border region, is needed when the goal is to exploit the potential for innovations across national borders in an effective and lasting manner.

1.1 Research Objectives and Purpose

This thesis encompasses two major objectives. Both relate to a better understanding of policy structure integration in cross-border regions. Firstly, it aims to provide a theoretical discussion of how the CBRIS framework could be enriched by extending it with the analytical policy mix concept based on the work of Flanagan et al. (2011) and Rogge and Reichardt (2016) to arrive at a theoretical framework that helps understanding the policy structure dimension of CBRIS. The theoretical objective is thus to create a cross-border policy mix concept. One target of the authors behind the policy mix concept was to offer a possibility to enrich the understanding of the role of policy mixes in other theoretical contexts, like system of innovation theories. As this thesis argues, the CBRIS framework lacks theoretical depth regarding its policy structure dimension. An integration of both concepts thus proves to be a fruitful avenue for this thesis.
Secondly, an application of this cross-border policy mix concept in a case study of a cross-border instrument as part of the Sønderjylland-Schleswig region's (SJSW) policy mix for the cleantech industry will provide new insights into this cross-border region's policy structure integration. It will show how a specific cross-border instrument interacts with the broader cross-

border policy mix and affects cross-border policy integration. Investigating the small segment of policy for the cleantech industry seems reasonable, as the cleantech industries are strong on both sides of the border. Arguably, not only on the industry level but also on the policy structure level integration will be at its best. Accordingly, in most other industries policy structure integration can be expected to be similarly or less established than in the cleantech industry. In conclusion, the thesis aims at providing suggestions for future adjustments of these structures in SJSW and draws an avenue for future research.

The term cleantech industry is defined here by the broad understanding used in a report by Kjedsen et al. (2009) on cleantech-strengths in Region Syddanmark (RSD). It encompasses all solutions, products, technologies or consultancy services that improve or protect the environment by improving the use of natural resource or energy efficiency of processes. This may include diverse sectors with exemplary fields of expertise in energy, climate, water, chemicals, materials, biodiversity, or waste among others (Kjedsen et al., 2009).

The objectives of this thesis can be translated in three major research questions, the first targeting the theoretical objective, and the second and third addressing the empirical application's objective. Most emphasis in the empirical part will be laid on question three a case study of the cleantech cluster instrument 'Furgy Clean Innovation'. The case was chosen as policy actors from different governance levels involved in this instrument are often also involved in other cross-border cleantech instruments. It will thus provide insights from a case that can be considered typical for the broader field of research. The results of question two mainly provide the context in which the results of question three can be interpreted. Sub-questions, specifying the research questions listed here directly relate to the methodological steps chosen to answer the questions.

1) How can the policy mix concept be integrated in a CBRIS framework?
    - Which aspects of cross-border policy structure integration can/ cannot be analysed with a cross-border policy mix concept?
2) How does the cross-border policy mix for the cleantech industry shape the policy structure of the CBRIS, in the SJSW region?
    - How strongly do strategies from different governance levels relevant to the cross-border region emphasise both cross-border and cleantech objectives?
    - What kind of cross-border cleantech policy instruments have been implemented relevant to the cross-border region?
    - What kind of energy efficiency cluster-instruments exist on the regional levels of Schleswig-Holstein (SH) and Region Syddanmark (RSD)?
3) How does the 'Furgy-Clean Innovation' (FCI) energy efficiency cluster instrument reflect and affect policy structure integration across the border?
    - How does FCI reflect and affect cross-border policy structure integration in terms of cross-border consistency of elements, such as strategies and instruments, coherence of policy-making and implementation, the credibility of the mix, and its comprehensiveness in terms of addressing existing problems?
    - Do the results correspond to the findings on policy structure integration in the SJSW region by Makkonen et al. (2016)?

1.2 Research Limitations

The research design chosen in this study is constrained by different factors.
The theory integration related to research question 1 develops a very broad framework of cross-border policy mixes. It is beyond the scope of this thesis to discuss all the different applications of this framework in a qualified manner. The discussion needs to focus on the usability of the framework in an application comparable to the study of a distinct cross-border cluster instrument and its implications for policy structure integration. However, the framework may well be used in other, more quantitative applications, for example if studying cross-border instrument mixes.
Further, a qualitative case study can hardly generate the amount of data needed to give a comprehensive picture of the policy structure integration in a CBRIS. What it can do, is drawing a nuanced picture of the specific part of policy structure integration that it investigates. Thus, looking at policy structure integration through the lens of a specific instrument targeting a specific industry, it can inductively generalise towards a partial understanding of the whole policy structure integration for policy directed towards the industry in question. Inductive generalisation, however, needs to be interpreted very cautiously as it rests upon few observations from single cases. Future studies may find an interest in adding to this partial understanding of the policy structure integration in the SJSW region by taking in a more holistic, deductive approach.
Future, more comprehensive and comparative case studies could address the limitations of this study and provide a more nuanced picture of the cross-border policy structures targeting the cleantech industries in SJSW. The results need to be read and interpreted in the light of these limitations.

1.3 Outline of the Thesis

After this section (1) has outlined research objectives, and research questions have been developed from gaps in the literature, this thesis is further organised as follows.
Section 2 reviews the literature that the theoretical contribution builds upon, and develops an integration of the concepts of CBRIS' and policy mix (2.5).
Section 3 describes the choice of methodology that was chosen to arrive at the stated research goal, and to answer the research questions. Section 4 analyses the results of the empirical investigation and provides a discussion. Section 5 concludes.

2 Theory

There is no comprehensive theoretical framework for the analysis of a cross-border region's policy structures. This chapter develops such a framework. It is organised as follows. Departing from the regional innovation system (RIS) approach (2.1), it elaborates on the key elements of CBRIS' (CBRIS) and the different aspects of their integration (2.2). Subsequently, the policy mix concept is explained in detail (2.3) and theoretically adopted to the CBRIS framework (2.4) to make it operationalizable for an empirical investigation of the policy structure integration dimension of a CBRIS.

2.1 Regional Innovation Systems (RIS)

Looking at policy structures in cross-border innovation systems requires a geographically more specific analytical lens than classical approaches of sectoral (Malerba, 2005) or national systems of innovation (Edquist, 2005) can provide. The regional innovation system literature may offer a good starting point as it highlights the importance of regional institutions and policy for innovative activities while it acknowledges the embeddedness of regional innovation activities and policy in larger contexts, such as the national context.

The regional innovation system approach attempts to provide a framework to analyse and understand the economic and social interactions between agents trying to foster and diffuse innovation in regions, that are being embedded in national and global context (Asheim et al., 2012).

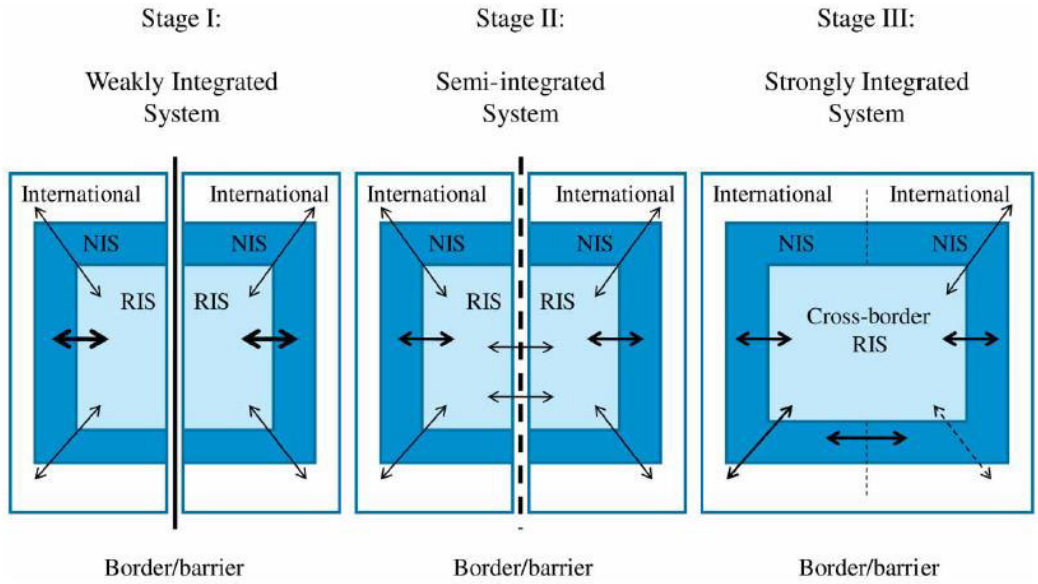
Early approaches on RIS have made a distinction between different types of RIS, such as traditional institutional RIS (IRIS) and entrepreneurial RIS (ERIS) (Asheim and Gertler, 2005). According to this distinction, innovation policy will vary according to regional industrial specialisation patterns and national, as well as regional "governance forms" chosen by the authorities (Asheim et al., 2005, p. 17). In this view, IRIS are typically to be found in coordinated market economies like in north-western European countries. Triple helix structures consisting of regional private organisations, public organisations, universities, and supporting regulatory institutions on the national level are usually well established in IRIS. Empirical studies indicate that policy in IRIS often tends to focus on supporting engineering based industries relying on synthetic knowledge bases, that is technical or engineering knowledge (Asheim and Coenen, 2005; Asheim et al., 2005). ERIS are more typically found in liberal market economies such as the UK or US (Asheim and Gertler, 2005). They are less dependent on a networked type of policy on the regional level. Support may to a bigger degree be focused on "(…) local venture capital, entrepreneurs, market demand and incubators (…)" to promote regional innovation in mainly science-based industries with an so-called analytical knowledge base (Asheim and Coenen, 2005; Asheim et al., 2005, p. 17).

Regional innovation system configurations can lead up to different types of policy and 'path development' recommendations (Grillitsch and Trippl, 2016) on the regional level, depending on factors like formal institutional set-ups, governance traditions, and the industrial specialisation, or diversification patterns that are to be supported. Thus, despite not addressing the special configuration of a region divided by a national border, the RIS approaches can be a useful frame when investigating policy subsystems, also in cross-border regions.
While to these concepts may need further elaboration for a reader unfamiliar with theories of economic geography, this thesis suffices with only naming them in order to provide a theoretical context for cross-border regional innovation system approach presented in the following section.

2.2 Cross-border Regional Innovation Systems (CBRIS)

The extension of the RIS approach to cross-border regions has been accomplished theoretically by Lundquist and Trippl (2009) and Trippl (2010).
Trippl (2010, p. 151) defines cross-border regions as" (…) spaces that consist of neighbouring territories which belong to different nation states". Addressing the problem that the RIS literature mainly discusses regions within nation states, she develops a concept of CBRIS that captures different levels of RIS integration within cross-border regions. Like in a RIS, actors in a CBRIS can range from single individuals to firms, universities, industrial organisations, unions, political parties, or civil society actors.
As further developed by Lundquist and Trippl (2013), the CBRIS approach takes contacts and partnerships among diverse public and private actors into account. The likelihood of these linkages to also cross the border, however, is highly dependent on the existing networks with other actors on different spatial scales and on historically rooted institutions on either side of the border(s). These differences in e.g. institutional set-up, innovation and knowledge capabilities, economic structure or infrastructure create the foundation for both cross-border cooperation as well as the restriction of the same. Too much or too little proximity, be it physical, functional, or relational, will in this line of argument impede cross-border cooperation, while a certain degree of different proximities can create potential for cross-border complementarities and synergies between actors (Boschma, 2005; Lundquist and Trippl, 2013).
Building upon these notions, the authors derive six major dimensions of integration of CBRIS. All dimensions taken together shape the cross-border region's potential for integrated innovation activities. The *knowledge infrastructure dimension* captures all knowledge generated and diffused in and through the CBRIS, i.e. organisations active in R&D, universities, or technology transfer organisations. The *economic structure dimension* encompasses the industries and clusters that apply and exploit the knowledge in the region. The *nature of linkages dimension* looks at the knowledge and communication flows among these actors that constitute the systemic character of the CBRIS. Formal and informal institutions influencing the relations between actors and organisations are included in the *institutional set-up dimension*. The *accessibility dimension* focuses on the influence of physical proximity between the bordering regions. Eventually, the *policy structure dimension* captures the activities of the policy sub-system, i.e. policy-makers on the regional, national and European level that directly or indirectly affect the cross-border innovation activities on the regional level (Trippl, 2010).

Depending on the level of integration within these dimensions, cross-border systems can be differentiated in weakly integrated, semi-integrated, and in strongly integrated systems (see fig. 2.1), with the term CBRIS actually characterising the highest, ideal form of integration (Lundquist and Trippl, 2013). The CBRIS term in this thesis, however, will be used for systems featuring any degree of integration, as in earlier publications, like Trippl (2010).



RIS dimension	Stage I: Asymmetric cost-driven system (weakly integrated)	Stage II: Emerging knowledge-driven system (semi-integrated)	Stage III: Symmetric innovation-driven system (strongly integrated)
Policy structures	Absence of policy 'leadership' with vision and lack of legitimacy. Low or asymmetric support from nation-states	Emergence of mechanisms for coordination of innovation policies	Transparent and democratic governance structures. Inclusive forms of governance and civic participation

Figure 2.1 Levels of cross-border integration and their characteristics along the policy structure dimension. Source: Lundquist & Trippl (2013)

Regarding the policy structure dimension, cross-border policy initiatives like INTERREG have been promoted by the European Union since the 1990s (Trippl, 2010). Also other types of initiatives originating from national, regional, or sectoral actors ranging from "(…) casual co-operation for specific purposes to the development and implementation of a coherent innovation strategy" have been realised to different degrees creating complex policy structures in these regions (ibid., p. 155). Similar to the discussion of IRIS or ERIS policies emerging in different administrative institutional contexts, Trippl (2010) argues that CBRIS policies are more likely to be successfully implemented in more network-oriented, federalist political systems with a high degree of regional autonomy that can promote cross-border institution building.
If regions in Germany and Denmark can generally be subsumed to the group of network-oriented IRIS policy structures, this will possibly lead to the hypothesis that a Danish-German cross-border region had a prominent position when it comes to successful cross-border innovation policies and policy structure integration. In the light of the purpose of this thesis, this leads to the question of how to approach the policy structure dimension in a cross-border region empirically.

2.3 The Policy Structure Dimension of CBRIS

So far, the policy structure dimension of CBRIS integration has only been researched to a limited extent. This chapter will elaborate on ways these studies have approached the policy structure dimension, both theoretically and methodologically, if applicable.

In their early working paper on CBRIS, Lundquist and Trippl (2009) look at what they initially called the 'governance dimension' of the Central European Centrope region and the Northern European Öresund region by empirically providing historical evidence of the establishment of cross-border organisations, institution building and coordination mechanisms. In a strongly integrated CBRIS, they expect many organisations promoting "(…) innovation driven integration (…) and stable mechanisms for long-term policy coordination" (ibid., p.10). As indicators of these regions they find institutional thickness, inclusive forms of governance and a common identity. Empirical evidence based on basic socioeconomic figures and historical evidence of cross-border organisations leads them to suggest that the Öresund region between Sweden and Denmark is a highly integrated CBRIS while the institutionally thin Centrope region is weakly integrated in terms of governance (ibid.).

In a theoretical contribution, Trippl (2010) develops the governance dimension further, bringing it in connection to the literature on innovation policy. She argues that the multi-level nature of governance in regional innovation policy-making requires vertical policy coordination. At the same time, in a cross-border setting an additional layer of governance is added that creates further demand for cooperation. Federalist states in this setting may offer better conditions for the development of cross-border policy structures as they leave regions a higher degree of autonomy than centralist states (Trippl, 2010, s.a.). In this context, she also acknowledges that the process of designing and implementing a joint innovation policy will only be successful, if communication and consensus building involve a wide range of stakeholders of the cross-border region (ibid.).

This policy-oriented understanding of the former governance dimension is picked up by Lundquist and Trippl (2013) in their theory building conceptual analysis, for the first time explicitly labelling it "policy structures" (p.454). Their version of a strongly integrated CBRIS, however, does not introduce new aspects to the theory, finding transparent, inclusive, and democratic governance structures with strong support from the respective nation-states, whilst the same is absent or only emerging in lower stages of CBRIS integration (ibid., see fig. 2.1). While this conceptual analysis sets the stage for further empirical analyses by defining and clarifying key concepts and semantics, it did not add much new to the understanding of the policy structure dimension.

More recently, scholars have started to apply the CBRIS concept empirically. Makkonen et al. (2016) note that an empirical investigation would need to research existing policies in the nationally embedded parts of a cross-border region regarding their consideration of cross-border collaboration, joint-innovation and R&D cooperation and regarding the importance they assign to these. For a quantitative approach, they suggest producing an index of shared policy goals, while acknowledging that it would involve an extensive data collection effort on the European level (ibid.).

Methodologically, they suggest using qualitative methods like questionnaires and interviews directed at officials in public or private organisations in order to grasp the more "intangible aspects of CBRIS integration"(ibid., p.13), like the integration of policy structures. However,

the authors remain silent about how to frame and capture this dimension theoretically and operationalise its elements.

A contribution that addresses this problem has been made by Van den Broek and Smulders (2014, 2015) on the Horticulture industry in the Venlo-Lower Rhine region (NL-GER). According to their primary research interest in institutional gaps in the cross-border region, they investigate the institutional integration of skill development for the labour market and cooperation in energy use, as well as the integration of innovation policy in the region (Van den Broek and Smulders, 2014). To this end, they apply a micro-level perspective contrary to the CBRIS concept's dominant macro-level perspective. They study the opinions and attitudes of stakeholders involved in cross-border innovation policy collaborations for the horticulture industry in a qualitative approach with help of interviews, observations and the analysis of policy documents (Van den Broek and Smulders, 2015). In the innovation policy field, they find a lack of integration due to institutional gaps rooted in different policy-making capabilities on the Dutch and the German regional level, as well as different priorities in innovation policies for the horticulture sector on both sides of the border (Van den Broek and Smulders, 2014). Coordination of policy is mainly stimulated via funding that comes from the EU, like through the INTERREG programme, and remains often focussed on single instruments (ibid.). The qualitative analysis through the lens of a "multi-level institutional architecture" (MLIA) (Van den Broek and Smulders, 2015, p.117) for a certain industry policy within a CBRIS shows that an empirical investigation of the policy structures dimension may make a fruitful contribution when trying to understand the overall macro-level integration processes.

More recently, this perspective has been further developed by Miörner et al. (2017), who investigate the role of cross-border policy network organisations in promoting cross-border integration and knowledge flows in the Öresund region. They find out that diverse interactions between different levels of governance affect CBRIS integration. Cross-border policy network organisations show to have an influence on national and EU level legislation, and thus policy-making by lobbing for completely new legislations or new interpretations of existing legislation (ibid.).

However, while this thesis follows Van den Broek and Smulders (2015) and Miörner et. al (2017) in applying qualitative methods, it argues that departing from the theoretical concepts of MLIA and looking at the institutional set-up only does not capture the diverse aspects of the policy structure dimension of a CBRIS in as much detail, as a qualitative approach would allow for. Understanding the complexity of the CBRIS' policy structure instead requires an analytical framework that resolves the complex policy mix for a cross-border region into its elements and processes across different dimensions. The policy mix concept presented in the following section may prove valuable in this respect.

2.4 The Policy Mix Concept

The terminology and related concept of a 'policy mix' has been developed and applied in studies from different scientific disciplines, such as environmental economics, innovation studies and policy analysis (Rogge and Reichardt, 2013). It rests upon the notion that policy structures are becoming more and more complex in recent times, while the complexity is not

being addressed adequately by policy research where it often is dealt with in a 'black box' manner (Flanagan et al., 2011).
In innovation studies, Nauwelaers et al. (2009, p. 3), conducting a study on policy for European R&D investments, define a policy mix as the "(…) combination of policy instruments, which interact to influence the quantity and quality of R&D investments in public and private sectors". Typically, their definition includes different kinds of instruments, their interactions, and a shared goal towards which they aim (Rogge and Reichardt, 2013). Other contributions have further stressed the dynamic nature of any policy mix as it evolves over many years, pointing to the fact that both the instruments and the interactions among them may change over time (Kern and Howlett, 2009).
Despite these common features, a comprehensive framework to analyse policy mixes empirically has not been developed until very recently. Addressing this shortcoming in the theoretical literature, Flanagan et al. (2011) argue that such a framework would need to go beyond only capturing the instruments and their interactions in a dynamic way. They suggest a framework that instead differentiates the elements of the policy mix more accurately according to their complexity taking multiple actors and levels of governance into consideration and including the policy processes by which instruments "(…) emerge, interact and have effects" (ibid., p. 703). Further, it should create a uniform terminology to make the concept more accessible and comparable (ibid.). Rogge and Reichardt (2013 and 2016) respond to Flanagan et al.'s criticism by developing an analytical framework for analysing policy mixes for sustainability transitions. Besides policy instruments, their interactions and policy processes they also consider the strategic component of policy mixes. Such a long-time strategic perspective of policy mixes becomes more important in the light of global challenges like climate change, targeting sustainability transitions (Rogge and Reichardt, 2013) or more specifically, as this thesis argues, in cross-border policy structure integration.
Rogge and Reichardt's (2016) analytical framework includes three major building blocks of a policy mix: elements, processes and characteristics. The three building blocks can be analysed across the dimensions 'policy field', 'governance level', 'geography' and 'time'. Building largely upon Rogge and Reichardt (2016), the following sections will outline the theoretical differentiations within each of the building blocks (2.4.1-2.4.3) and elaborate on the different dimensions in an extra section eventually (2.4.4).

2.4.1 Elements

The elements of a policy mix consist of the *policy strategy* and the interacting *policy instruments*, as an entity labelled as *instrument mix*.
The policy *strategy* usually consists of certain *objectives* that in case of sustainability transitions may be quantifiable reductions in greenhouse gas emissions, or job creation and growth in cleantech industries. These objectives will usually be found written in strategic plans, published by the government or other authorities such as guidelines or actions plans that shall guide the overall direction of policy actions. As they are being long-term oriented, they can affect the innovation system by providing planning security to firms and organisations. Their direct operationalisation however requires policy *instruments* aligned with the strategy (Rogge and Reichardt, 2016).

	Primary purpose		
Primary type	Technology push	Demand pull	systemic
Economic instruments	R&D grants and loans, tax incentives, state equity assistence	Subsidies, feed-in tariffs, trading systems, taxes, levies, deposit-refund-systems, public procurement, export credit guarantees	Tax and subsidy reforms, infrastructure provision, cooperative R&D grants
Regulation	Patent law, intelectual property rights	Technology/performance standards, prohibition of products/practices, application constraints	Market design, grid access guarantee, priority feed-in, environmental liability law
Information	Professional training and qualification, entrepreneurship training, scientific workshops	Training on new technologies, rating and labelling programs (standards), public information campaigns	Education system, thematic meetings, public debates, cooperative R&D programs, clusters

Figure 2.2 Primary policy instrument types and purposes; R&D includes research, development and demonstration. Source: own figure based on Rogge and Reichardt (2016)

Instruments are those tools that aim to achieve the overarching objectives of the strategy. In a simplified way, they can be differentiated in different *primary types and primary purposes* (fig. 2.2). This acknowledges that an instrument will not only fit one of the theoretical categories but rather several in most empirical cases. Among the types, economic instruments refer to those creating incentives for investment to direct corporate R&D or export activities in a certain direction. Regulation refers to formal institutions like laws and standards. Information involves all instruments aiming at providing knowledge and networking opportunities between the actors of the innovation system. Regarding the purposes on the horizontal of fig. 2.2, technology push refers to instruments directly targeting the supply side, while demand pull instruments attempt to influence the technological development from the demand side. Systemic instruments address the context of the whole innovation system and its internal and external interactions. Fig. 2.2 shows examples of instruments that can be assigned certain primary types and purposes (Rogge and Reichardt, 2016).

Instruments can further be differentiated along *descriptive and abstract design features* that may affect their effectiveness. *Descriptive design features* characterise the legal form of the instrument, the targeted actors, and the duration of the instrument's validity. *Abstract design features* can be characterised by stringency, level of support, predictability, flexibility, differentiation, and depth. For example, instruments may differ in their predictability, all after how detailed the direction of their future application and rules is lined out. Predictable instruments will positively affect the credibility of the mix. In terms of flexibility, targeted actors may be given different degrees of freedom when applying for compliance with a certain instrument (e.g. funding) (Rogge and Reichardt, 2016).

An *instrument mix* characterises different instruments and the interactions among them that together influence a certain innovation system, e.g. a region depending on their depth. Instruments in an instrument mix may influence each other directly or indirectly through interactions between them, depending on their specific context (ibid.). The extended analytical policy mix concept presented here uses Flanagan et al.'s (2011) differentiation of policy interactions. It distinguishes (1) interactions between the *same instruments* across different dimensions (see section 2.4.4), and between *different instruments* targeting the (2) *same actors*

in the same process, (3) *different actors* in the same process, or (4) the *same* or *different actors* in a broader system. Interactions may be positive or negative with respect to the goal for which the instruments strive (Rogge and Reichardt, 2016). As Magro et al. (2014) suggest, negative interactions in science, technology and innovation (STI) policy may indicate a need for better policy coordination efforts from policy-makers in multi-level governance settings.

2.4.2 Processes

Having elaborated on the elements of the policy mix, this section will deal with the policy processes that determine the strategy and instruments over time and shape the mix' characteristics (see section 2.4.3). According to Rogge and Reichardt's (2016) definition, policy processes consist of policy-making and policy implementation.

Policy-making processes can be understood as"(…) political problem-solving process among constrained social actors in the search for solutions to societal problems"(ibid., p.1625). National or regional governments often initiate them. They involve ongoing interactions and reconciliation of policy-makers, and they can differ across time and space as they are shaped by local institutions, culture, environment, and socio-economic conditions. Among policy-making processes, the authors count 'policy adaption' and 'learning' through interaction at different levels, the 'monitoring' and 'evaluation' of the impacts that a certain policy mix has, as well as participatory and political processes in the policy-making that may be impeded by vested interest and lobbying (Rogge and Reichardt, 2016).

Policy implementation processes are defined as the arrangements made by those actors that execute and enforce the elements of the policy mix, e.g. certain instruments. Implementation processes may face political resistance when the policy-making and implementing actors have divergent ideal perceptions of the implementation process (ibid.).

Further, the *policy style*, meaning the typical kind of operating procedures for policy-making and implementation by a certain authority or set of actors, can have a strong influence on the overall policy mix (ibid.).

2.4.3 Characteristics

The characteristics of the policy mix describe its elements and processes in terms of *consistency, coherence, credibility,* and *comprehensiveness*.

The *consistency* of the elements of a policy mix describes the degree to which they are aligned with each other. It can differ across different dimensions (see section 2.4.4). One speaks of a consistent policy mix, if elements are free of contradictions and major conflicts. Strong consistency, however, goes beyond this, requiring the exploitation of synergies between the elements. A strong consistency calls for a policy mix in which every instrument takes the other instruments' goals, types, purposes, and design features into consideration to avoid contradiction, and to reinforce one another where possible. Rogge and Reichardt (2016) further differentiate between first, second and third level consistency.

First level consistency looks at the alignment of policy objectives on the strategy level. Strategies of different policy fields (dimension) should be achievable without trade-offs in any policy field's individual strategy. A weak first level consistency may refer to what Weber and

Rohracher (2012) describe as “horizontal coordination failure” (p. 1043) on the level of policy strategies in their influential work on transformational innovations system failures. At the same time, however, it may as well refer to “vertical coordination failure” (ibid., p.1043), if strategies from different levels of governance (dimension) lack consistency. This illustrates the importance of dimensions when talking about the characteristics of a policy mix. Second level policy consistency focuses on the instrument mix attempting to assess to what degree the instruments in the mix reinforce or undermine each other. The degrees can vary between strong consistency with primarily positive, weak consistency with neutral, and inconsistency with negative interactions. Third level policy consistency, eventually, captures the interplay between strategies and the instrument mix overall. As the outcome of the first and second level consistencies strongly influences third level consistency, it can be regarded as an overall consistency of the policy mix (Rogge and Reichardt, 2016).

While consistency is a characteristic of policy elements, *coherence* is attributed to processes.

A high coherence of processes relates to well-organised, synergistic, and systematic policy-making and implementation. Firstly, this requires that processes across the dimension’s policy fields and governance levels are well-planned, coordinated and communicated. Secondly, to achieve this, organisational capabilities like learning and network building need to be present among stakeholders across the dimensions. In effect, coherence of processes can directly influence the effectiveness of the policy, e.g. measured in ex-post assessment criteria, or indirectly by shaping the policy mix elements and creating instrument consistency or inconsistency. Coherence of processes can be achieved with the help of policy integration and coordination actions that enable policy-makers from different public or private organisations involved to think more holistic and align their actions (Rogge and Reichardt, 2016).

The characteristic of *credibility* mainly refers to the perceived “(…) extent to which the policy mix is believable and reliable, both overall and regarding its elements and processes"(ibid., p.1627). Political structures like short-term electoral cycles can thus influence the credibility negatively.

Comprehensiveness as a last characteristic reflects the structure and thoroughness of the mix. It can be applied both to elements and processes. A high comprehensiveness will involve a strategy and instruments fulfilling all primary purposes that address all sorts of market, system and transformational failures in coherent processes (Rogge and Reichardt, 2016). Accordingly, it shows the degree to which all possible components can be found in an empirical policy mix.

2.4.4 Dimensions

As already pointed out several times in the previous paragraphs, elements, processes and particularly their characteristics can be analysed across different *dimensions*. The dimensions refer to the origin of certain components of the policy mix. Their definition is crucial in the setting of the boundaries for an empirical analysis and the integration of the concepts in other concepts like the CBRIS approach (see section 2.2).

Rogge and Reichardt (2016) distinguish four dimensions: *policy field, governance level, geography* and *time*. *Policy fields* are domains such as energy, environmental, climate or STI that elements and processes can be abstracted to. As shown in section 2.4.3, inconsistencies can occur between them. The *governance level* dimension differentiates between vertical and horizontal governance. Vertical, relates to relations between higher and lower levels of governance. Thus, inconsistencies between policy-making on the EU or national level and

implementation on the regional or local level would fall into this category. Horizontal governance relations, as explained above, refer to different political or administrative entities on one level of governance, such as different government departments.
Geography relates to the spatial implications of the policy mix. Strategies and instruments may be targeting a certain region, while the responsible organisation for policy-making may be located somewhere else. Funding initiatives for certain city regions or regional industrial cluster promotion originating from a capital ministry could be examples.
As the policy mix is understood to be evolving dynamically, *time* necessarily must be the last dimension as elements, processes and characteristics of the mix may change over time.

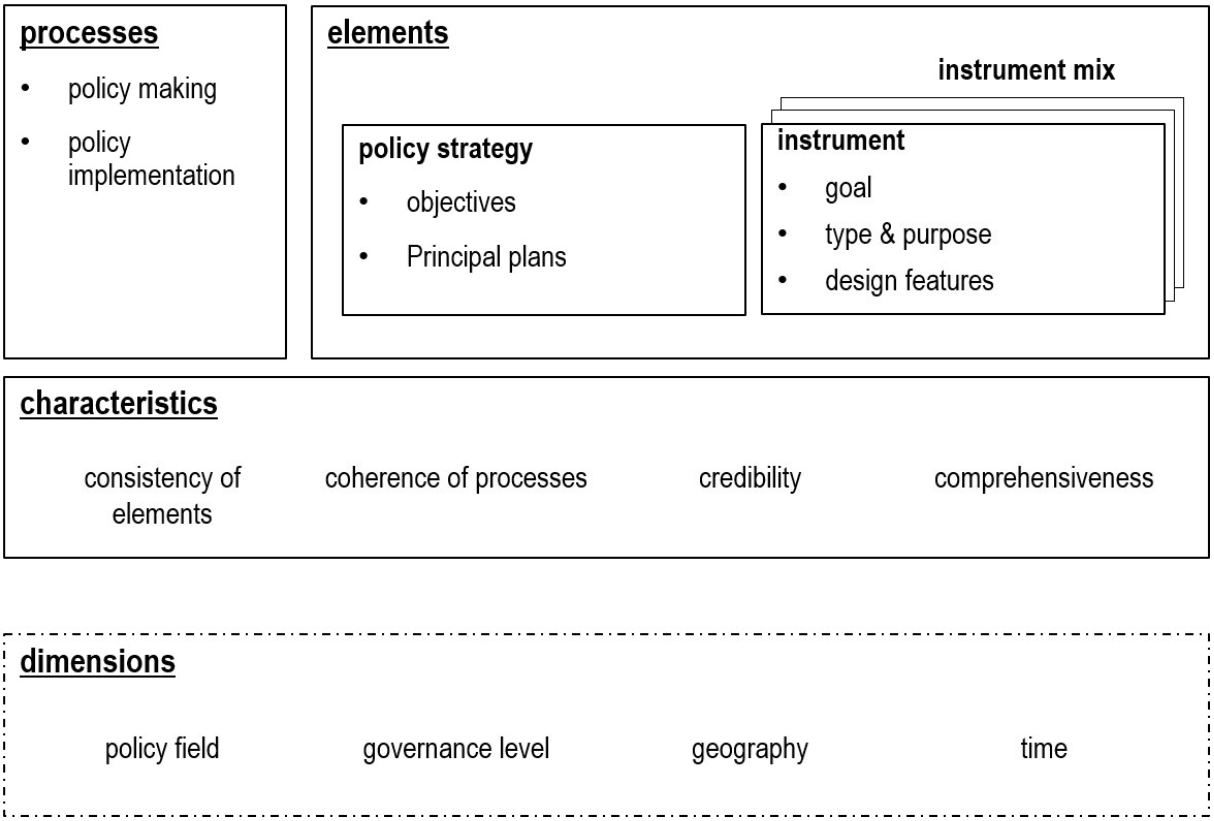


Figure 2.3 Building blocks of the analytical policy mix concept. Source: own figure based on Rogge and Reichardt (2016)

2.5 Towards a cross-border policy mix concept

No study has explicitly used the policy mix concept to investigate cross-border policy structure integration yet. Muller et al. (2017) use single elements of the concept in their investigation of policy dynamics and challenges in the Upper Rhine cross-border region but do not actually apply the concept in their analysis, nor do they refer to the policy structure dimension as their focus of interest. This chapter will show how the two concepts are related and offers a suggestion for integrating them in a joint cross-border policy mix concept.

To apply the policy mix concept presented in the previous section to the CBRIS framework and enrich the understanding of the policy structure's role for cross-border regional innovation system integration, the boundaries of the initial policy mix concept need to be adjusted according to the specifications of the CBRIS in question. This section addresses the first research question, showing how the policy mix concept can improve the understanding of CBRIS integration. In a first step, it will investigate how the boundaries of the policy mix concept are being affected by being embedded in a CBRIS framework. In a second step, it will argue for the distinct value which the framework can add to an investigation of the policy structure dimension in CBRIS integration.

Setting the boundaries of a policy mix analysis requires a clear definition of the scope of the policy mix and the unit of analysis (Rogge and Reichardt, 2016). The scope of the mix may encompass a single product, service, technology, or practice that policy shall support but it might also be a whole sector or a whole system of sectors. The unit of analysis, further, involves decisions about all the relevant stakeholders and organisations that engage in policy-making and implementation, about the geographical confines of the impacts of the policy mix in question, and the range of time that the analysis should cover (ibid.)

While the distinct scope of the policy mix that shall be investigated needs to be defined in its empirical application, embedding the policy mix concept into a cross-border context has implications for the unit of analysis.

As shown in chapter 2.2, the CBRIS approach through the lens of its policy structure dimension focuses on all the actors involved in the making and implementation of policies targeting actors located within the narrower confines of the cross-border region. It is thus the dimension of geography of the policy mix concept that is to some degree predetermined through the space delineated as the cross-border region in question. However, the geography dimension is only determined regarding the targeted actors of the policy mix. The geography of policy-makers and implementing organisations may quite well be outside the cross-border region, particularly because the outer borders of the cross-border region may be difficult to define. This is exemplarily reflected by the multi-scalar nature of cross-border institutions found by Miörner et al. (2017).

The time dimension does not necessarily need to be affected as the concept of CBRIS integration is meant to be an evolutionary concept though Makkonen and Rohde (2016) observe that the perspective chosen by most studies is rather the static state of cross-border integration than its dynamic evolution. Hansen's (2013) contribution on the effect of the establishment of a fixed link between Copenhagen and Malmö in the Öresund Region on scientific collaboration in the biotech industry over time and Miörner et al.'s (2017) study on changing institutional preconditions over time mark an exceptions in this respect.

Like in case of the time dimension of the policy mix, the CBRIS framework allows for the recognition of different policy fields and requires different governance levels to be considered. Thus, these dimensions will be considered in a joint policy mix concept for a cross-border region (CBR). The policy fields present in a CBRIS, however, depend on the national definitions of different policy areas affecting the respective parts of the CBR. Different governance level in the CBR may be part of the individual policy sub-systems on any side(s) of the border and may possibly, in case of a well-integrated system, even entail cross-border governance entities.

Where the policy mix concept does contribute to the new concept, is within Lundquist and Trippl's (2013) policy structure dimension (see fig. 2.4). Investigating the *characteristics of the policy mix for a cross-border region*, e.g. in a certain policy field across different governance levels over time, allows for a more nuanced understanding of policy structure integration. It goes beyond using macro-economic figures such as the number of organisations promoting cross-border policy coordination or indices for shared policy goals like in Makkonen et al. (2016).

Firstly, this is achieved by looking at (1) the *consistency of cross-border policy elements*, meaning the consistency of strategies and instruments directed to the cross-border region or parts of it that may originate from different governance levels and change over time. An increasing consistency of policy elements across the border over time would indicate increasing policy structure integration in this sense.

Secondly, in a similar manner the framework investigates (2) the *coherence of cross-border policy processes*, again meaning both those processes directly directed to the cross-border region but also those directed to its individual parts. Thus, if the coherence of processes on one side of the border is high as authorities on different levels act well-planned and coordinated, but on the other side, policy-makers or implementers lack the necessary capabilities, this will negatively affect the coherence of cross-border policy processes. Increasing coherence of processes across the border over time could imply a positive impact on the integration of policy structures.

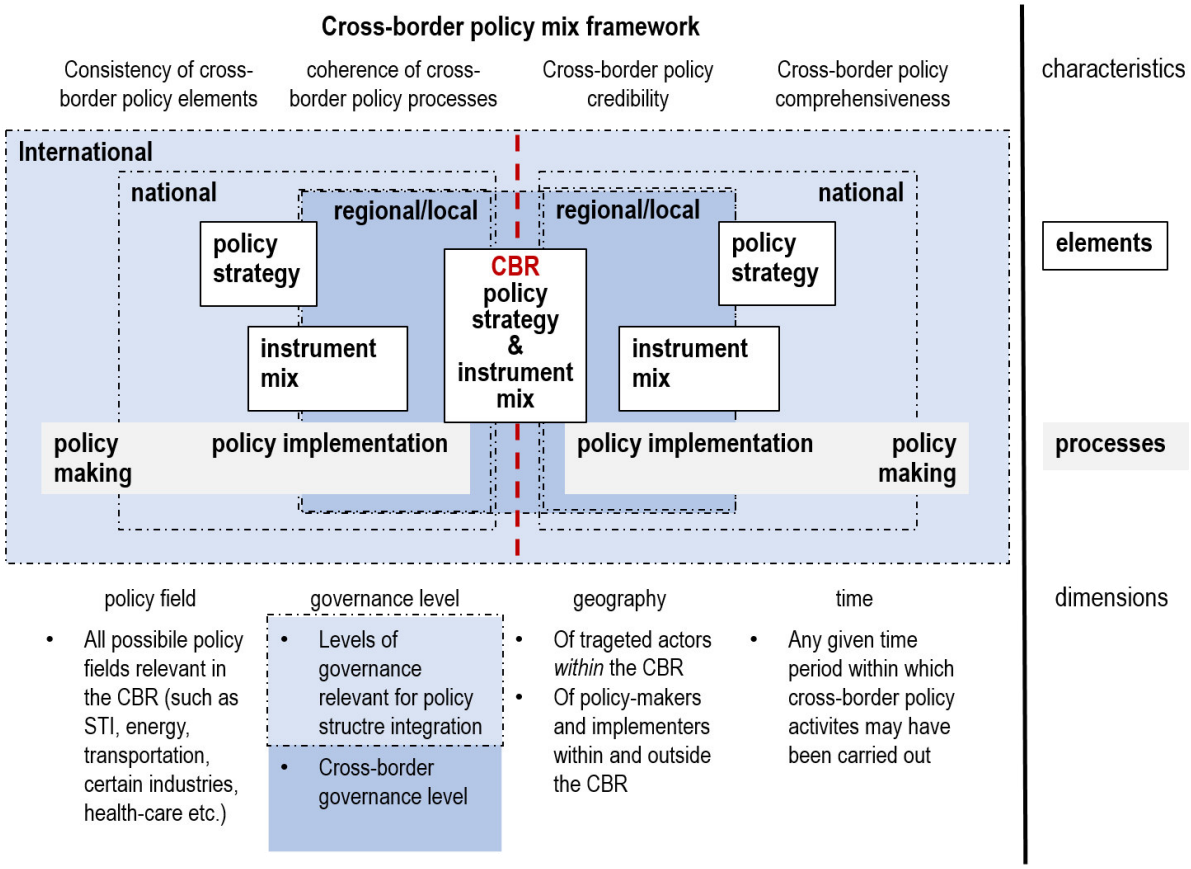


Figure 2.4 Policy mix in a cross-border region framework. Source: own figure developed based on Lundquist & Trippl (2013) and Rogge & Reichardt (2016).

(3) *Cross-border policy credibility* may further be a particularly important factor for the integration policy structures. In a situation where cross-border policies are highly relying on support by the European Union, as indicated by Van den Broek and Smulders (2015), long-term-credibility may be under growing stress in the light of funding being usually limited to a period of a few years. An increasingly high level of cross-border policy credibility, however, will be needed to promote further integration of policy structures in the CBRIS.
Eventually, (4) *cross-border policy comprehensiveness* captures the degree to which the policies increasingly address all market, system and transformational failures present in the cross-border region over time.
If e.g. the border poses challenges to cooperation and knowledge exchange in the cross-border region, that are not being addressed adequately by the policy mix, this can be understood as an indicator for a low degree of policy structure integration. If, instead, policy-makers have managed to put a comprehensive set of actual cross-border policies in place that increasingly address the failures present in the system, this indicates that policy structure integration is high.
In the application of the framework in a cross-border region context, elements and processes remain as analytical building blocks in the form suggested by Rogge and Reichardt (2016, see section 2.4).
In the cross-border policy mix concept presented in fig. 2.4, they appear on both sides of the border as one can assume there to be individual policy elements in each of the border regions. At the same time, they may be present in the form of distinct cross-border policy strategies or instrument mixes, and accordingly be located on a cross-border governance level, which will be more likely in a well-integrated CBRIS. The framework presented in fig. 2.4 does not make any statement towards the degree of integration of the policy structures but rather shows the relation of all its components to one another. Still, in CBRs with very weakly integrated policy structures, cross-border policy elements may not be present at all. In these regions, it may not make sense to speak of a cross-border governance level. Thus, in the form developed here, the concept assumes there to be at least a little degree of cross-border policies put in place. How developed this cross-border governance is, and to what degree it has been the result of cross-border policy structures integration are the research questions that the cross-border policy mix concept seeks to help providing an answer to.
As shown in the previous paragraphs, the application of a policy mix concept for the analysis of the policy structure integration in a CBRIS may provide new insights into the complexity of this CBRIS dimension, that previous studies have not been able to create. As intended by Rogge and Reichardt (2016, p.1632), the theoretical "(…) integration of the policy mix concept with other research approaches (…) may further sharpen the analytical clarity and policy advise of such approaches in the context of sustainability challenges". Future research must show to what degree this holds true for an integration with the CBRIS approach as developed in this thesis. The case study provided in the empirical part of this thesis, investigating the policy mix for the cleantech industry in the SJSW cross-border region between Denmark and Germany will, however, create first insights for further empirical applications.

3 Methodology

This chapter elaborates on how the empirical research for this thesis has been conducted. It follows Creswell (2014) in dividing the layout of the whole research approach into philosophical considerations, the research design chosen, and specific methods of data collection and analysis. Philosophical considerations (3.1) relate to the assumptions that are connected to the worldview that the research approach chosen in this thesis implies. The chapter aims to position the thesis in terms of ontology and epistemology. These positions pave the way for a description of the distinct research design (3.2) and the applied methods involved in it (3.3 & 3.4) before discussing objectivity, reliability and validity implications of the approach (3.5).

3.1 Philosophical considerations

It is worth considering the worldview building upon which the research approach for this thesis has been developed. Worldview, in this section, means the philosophical orientation that guides any individual research approach, and thus its choice of methods (Creswell, 2014). Other authors differentiate a researcher's worldview between an ontological perspective and an epistemological perspective (ibid.; Mason, 2002; Vasilachis de Gialdino, 2009). On the one hand, the ontological positioning connected to a certain worldview concerns the question of how the researcher defines the nature of the phenomena, entities, or social reality that the research seeks to investigate. Ontological elements may be understood and defined differently, depending on the worldview they are based on (Mason, 2002). On the other hand, the epistemological perspective taken in by a researcher refers to the question what could represent knowledge or evidence of the phenomena, entities or social realities that shall be investigated. Put in other words, the epistemological perspective affects the individual researcher's understanding of whether or how e.g. a social phenomenon can be known (ibid.). Thus, knowledge about certain phenomena may be impossible to demonstrate from a certain epistemological perspective while it may well be from another. Ontological and epistemological perspectives are closely related and reflect different philosophical worldviews, such as "(…) positivists, interpretivists, feminists, realists, ethnomethodologists, [or] postmodernists (…)" (Mason, 2002, p. 15) or overarching paradigms, such as "historical materialistic", "positivist" and "interpretative" as distinguished by Vasilachis de Gialdino (2009, p. 3).

Taking the differentiation between post-positivism, constructivism, a transformative worldview and pragmatism suggested by Creswell (2014), the research approach chosen for this thesis builds largely upon a pragmatic worldview.

While a post-positivist worldview may often be associated with a quantitative, deductive research approach and a constructivist worldview with a qualitative, inductive approach, a worldview based on pragmatism argues that a sharp distinction between dogmatic paradigms

and related methods is not useful in practice (Morgan, 2007). Rather, pragmatism advocates an abductive kind of inquiry that involves moving back and forth between inductive and deductive elements. Thus, it establishes an ontological and epistemological understanding that does not dismiss the results generated from other understandings (ibid.).
The choice of methods in this thesis (section 3.3 & 3.4), that is predominantly qualitative and of an inductive nature, could suggest that the worldview the approach is based upon was constructivism. However, when looking at the broader research field of CBRIS integration, it becomes apparent that the approach chosen here is complementary to other more deductively oriented approaches that focus on other or even the same CBRIS dimension (Makkonen et al., 2016). Thus, regarding the current state of research on policy structure integration in the SJSW region, based on a single quantitative study, a pragmatic worldview called for a triangulation of these findings through a more inductive lens. This thesis shall in this sense be understood as embedded in a field of research that embraces both inductive and deductive approaches for a more complete understanding of the whole phenomenon. The worldview this reflects, is pragmatic.

3.2 Research Design

Stemming from a pragmatic worldview, the research design of this thesis is composed of different methodological elements that seek to provide an answer to the core research question. It is divided in a theoretical part relating to research question 1 and an empirical part relating to research questions 2 and 3. Thus, the theoretical part addresses the question how the integration of the policy mix concept and the CBRIS approach may enrich the understanding of the integration of cross-border regional policy structures. The empirical part applies the analytical framework developed in the theoretical part to the case of the 'Furgy Clean Innovation' (FCI) instrument in the SJSW region addressing the question how the cross-border policy mix viewed from this case affects the integration of the cross-border regional innovation system. FCI is a cross-border cluster instrument that attempts to facilitate innovations that are being developed in cooperation between German and Danish firms in the cross-border region (Syddenmark and Schleswig-Holstein, 2017b). Choosing a case study of an instrument for the cleantech industries was motivated by the fact that cross-border policy for this industry had been a clear focus of the German-Danish cooperation for the past 10 years, with FCI being named as the prime example of this cooperation in recent years (Syddenmark and Schleswig-Holstein, 2017b). The choice of the case thus rests upon the assumption that it represents a part of the CBRIS where policy structure integration may be at its best.
In the theoretical part, "theory comparison and integration" (Bortz and Döring, 2006) was applied on the CRBIS framework and policy mix concept to arrive at what is labelled a cross-border policy mix concept. Successful theory integration is considered difficult as it requires "(…) meaningful linkages and causal relations (…)" (Bortz and Döring, 2006, p. 362) between the concepts. As this thesis argues, the extent to which this requirement is fulfilled needs to be tested in an empirical application. Therefore, the empirical part, that primarily aims at answering research questions 2 and 3, further functions as an empirical test of the new analytical framework developed in section 2.5.

Given the intangible, process and activity-oriented character of the field of interest in research question 2 and 3, the empirical part is designed as a qualitative case study (Creswell, 2014). As a case study design is of explorative nature its rationale and direction may have changed throughout the research process (Yin, 1994). This is reflected by the fact that winning the "gate-keeper" (s.b.), interviewee I (see AppC1), for a cooperation made it reasonable for the researcher to focus on the FCI instrument at an early stage of the case study.
According to Creswell (2014), a pragmatic worldview most likely will be associated with a mixed methods approach where the researcher applies both quantitative and qualitative methods. This thesis, however, does not apply quantitative methods of data collection or analysis, but a solely qualitative research design. Nevertheless, it departs building upon, so far, entirely quantitative findings on CBRIS integration in the SJSW region (see section 4.1). Further, and most importantly, the qualitative approach chosen to investigate the integration of policy structures in a CBRIS is meant to be understood as only one possible element in more comprehensive future studies focussing on several CBRIS dimensions in a mixed-method approach. Qualitative methods for data collection and analysis deployed in this thesis are presented in the following section.

3.3 Data Collection Methods

In the first methodological step for the case study, policy documents relevant to the cleantech industry within the cross-border region were identified and categorised based on the theoretical framework (section 2.5) in documents on the strategy level and on the instrument level across different dimensions (see AppA). The identification of these documents was possible through desk-research as most policy documents targeting the cross-border region are made available online through the designing or implementing organisations. The sources of all documents were captured in AppA. A "scientific document analysis" (Döring and Bortz, 2016, p. 533) helped assessing these documents to identify their different strategy objectives and plans, as well as instrument goals, types, purposes, and selected descriptive design-features for analysis (AppA9 ff). For reasons of simplification, abstract design features were not captured but reflected upon in the discussion, whenever it seemed applicable. The policy strategy documents provided information about current cross-border strategies and cleantech strategies in the cross-border region. The instrument documents selected were more specifically describing cross-border cleantech instruments and regional cleantech cluster instruments on both sides of the border that the case study instrument 'Furgy Clean Innovation' could interact with. While it is important to highlight that regional instruments of a different type or purpose than cluster instruments will interact with FCI as well, their recognition was beyond the scope of this thesis. The documents' content allowed for a preliminary descriptive analysis of the consistency of cross-border policy elements with the case study instrument as described in section 2.5. Noteworthy from a methodological point of view, the policy documents were characterised by what Döring and Bortz (2016) call "non-reactivity", meaning that they have not been affected by research process itself beforehand. In the case of this study, "non-reactivity" could be considered positive as it facilitated the empirical identification of the pure policy elements and their formal consistency. However, the document analysis would not provide sufficient data

about the actors' perceptions, and of the more socially contingent policy processes and their coherence, as well as credibility and comprehensiveness.
A field research consisting of three semi-structured expert interviews, including one participating observation plus a field conversation with additional mail exchange (AppC, Tab.1) was applied as the second main method of data collection for the case study. The field research aimed at compensating for the drawbacks of the document analysis by gathering perceptions of the policy mix element consistency, processes and their coherence, the credibility of the cross-border mix, and its comprehensiveness from policy designing and implementing actors related to the case study instrument. The interviews were conducted on March 27th 2017 and April 03rd 2017 (see AppB). Interviewee I, the key project manager of the case instrument 'Furgy Clean Innovation' on the Danish side, can be considered as a "gate keeper" (Bortz and Döring, 2006, p. 339) as he provided the researcher with useful suggestions for further interviewees and supported the researcher's integration into the field.
Each interview was prepared with the help of detailed and individual theory-led interview guidelines (Bogner et al., 2014) that were developed based on the theoretical framework developed in chapter 2.5 (see AppA). The semi-structured, guideline-based interviews included open questions that attempted to direct the focus of the interviews on the relevant categories based on which they would be analysed afterwards.
The interviews were transcribed to access the information for analysis (see AppC). Further remarks about atmosphere and non-verbal statements made by the interviewees were included in the transcripts based on the researcher's observations and subsequent notes during the interviews as suggested by Meier Kruker and Rauh (2005). One interview (II) could not be recorded due to strong concerns of one interviewee the spoken word might be used against him if it was recorded. While the researcher followed the interview guidance, documentation of the interview could only be done with help of "field notes" (Bortz and Döring, 2006, p. 340) during and immediately after the interview. Accordingly, the method applied in this part of the field research must more accurately be described as a participating observation (Döring and Bortz, 2016). A fourth interview (IV) was initially planned but the interviewee, an official at a German regional federal state ministry, insisted in a telephone call on answering questions in written form, which is why the field method applied was a kind of field conversation with additional mail exchange. A drawback of this written response is that the process of investigation is uncontrolled, which weakens the value of the data for the analysis (Bortz and Döring, 2006, p.252).

3.4 Data Analysis

Qualitative content analysis was chosen to analyse the transcripts and notes produced by the different means of data collection. The method was considered suitable as it is open and leaves room for the interpretation of both verbally communicated and implicit non-verbal content (Häder, 2015). This was considered as an advantage regarding the different methods of data collection. The categories for the content analysis were directly derived from the cross-border policy mix concept following Mayring's (2000, p.4) step model for "deductive category application". A code plan was developed following this model assigning clear definitions and coding rules to every category (see AppC). Based on this model, the assignment of categories

to the analytical units, that were mostly text-passages, would have been kept open with the possibility of creating new categories, if relevant information concerning the integration of the cross-border policy structures was not captured by the cross-border policy mix concept. In the way adopted in this thesis, the method can be described as a structuring content analysis as certain theory related contents were filtered from the empirical data (Mayring, 2015).
As suggested by Meier Kruker and Rauh (2005), the main categories were, if applicable, supplemented by more specific sub-categories, following the coding-plan. The differentiation between first, second and third level element consistency as sub-categories of cross-border consistency of policy elements is an example (see AppC, tab.3).
The coding was conducted with support of NVivo11 Starter software. Relevant analytical units were assigned to the main categories in NVivo. However, the final assignment of the analytical units to the sub-categories and the paraphrasing was done in Microsoft Word as illustrated in AppC. The results of the qualitative content analysis, presented in section 4.2, build upon these paraphrases. The paraphrasing of the two transcription protocols and the notes of the other field methods further involve a first reduction of the empirical material. In both cases the content was further translated from Danish and German to English. The interpretation of the results is subject of the subsequent discussion (section 4.3).

3.5 Objectivity, Validity, and Reliability

A qualitative approach, as the one chosen in this thesis, is strongly affected by the researchers own abilities and, even more so, experiences with and relations to the objects, persons, or regions the research focusses on. In case of this study, the operating researcher is personally affiliated with the SJSW region as he has lived in the area for two consecutive years between 2009 and 2011. Affiliation with the field of interest may certainly affect objectivity. However, it must be stated that the researcher has not been affiliated with or related to any of the contacted organisations or individuals in the field beforehand, and does not seek to benefit from the contacts made during the fieldwork. Instead, knowledge of both languages, cultures and the area is thus rather seen as an advantage for the practical conduction of the research in this case. Further, experience from an internship at the German-Danish chamber of commerce between 2015 and 2016 has provided the researcher with an idea of German-Danish business relations, general perceptions, and prejudices on both sides that might be helpful putting results into perspective.
It is further important to note that the different methods of data collection applied in this study will lead to data with different degrees of validity. Findings reflected upon in the discussion need to be understood in this light.

4 Analysis and Discussion

Before presenting the results of the analysis of the empirical parts of this thesis, section 4.1 presents the context of the case study cross-border region and findings on the integration of the CBRIS. The analysis section 4.2 elaborates on the results of the document analysis and the field work, while section 4.3 discusses the results in the light of the three research questions.

4.1 Context: Sønderjylland-Schleswig's CBRIS

The boundaries of the cross-border region that this thesis' empirical part focuses on can be defined by different indicators. A formal definition that is easily applied is by means of administrative borders. As a governance level the region of Sønderjylland does not exist formally as it is located within the formal administrative region of Southern Denmark. It contains the municipalities of Haderslev, Sønderborg, Tønder and Aabenraa that all share a common cultural history and identity, which creates a strong social cohesion in the region (Region Syddanmark, 2015). These municipalities also stand for the Danish part of the cross-border cooperation, called Sønderjylland-Schleswig, that was founded in 1997 (Sønderjylland-Schleswig, 2017a). The German part of this region encompasses the northern part of the German federal state of SH, defined by the municipalities of Kreis Schleswig-Flensburg, Kreis Nordfriesland and the city municipality of Flensburg (ibid.).

Figure 4.1 Map of Danish and German municipalities in the Sønderjylland-Schleswig region. Source: *www.region.de [accessed: 14.04.2017]*

For reasons of consistency, this thesis follows the two studies on the cross-border region and the integration of its CBRIS by Makkonen (2015) and Makkonen et al. (2016) in defining its boundaries by these administrative borders. However, as the cross-border policy-mix framework developed in section 2.5 takes-in a multi-level governance perspective, policies investigated in the empirical part are designed and implemented not only in the cross-border region but to a large extent on the levels of governance of the adjacent regions of RSD and SH. The previous Makkonen study, mentioned above, focuses on the knowledge infrastructure dimension of the CBRIS framework by measuring cross-border scientific collaboration with measures of co-authorships (Makkonen, 2015). It finds a weakly integrated knowledge

infrastructure in the cross-border regional innovation system with only few fields, such as engineering and neuroscience, that can evidently gain from cross-border collaboration. This can partly be explained by missing complementarities between the knowledge bases on both sides of the German-Danish border, compared for example to the Danish-Swedish Öresund Region (ibid., Hansen, 2013). However, the author acknowledges that his method (i.e. measuring co-authorships) does not capture all potential forms of scientific collaboration across the border. Thus, while the study concludes that the knowledge infrastructure dimension of the CBRIS is weakly integrated, it may underestimate the potential for knowledge exchange.
In a methodologically similar manner, Makkonen et al. (2016) apply their own analytical framework with measurable indicators for integration in all six dimensions of the CBRIS. The SJSW region is chosen as one empirical example of the application of their framework, next to the Danish-Swedish Öresund Region and the Danish-German Fehmarnbelt region. The results of their study, presented in a stylised integration index, reflect the relatively weak integration of the knowledge infrastructure/science base dimension, already discussed in the 2015 study (see fig. 4.2). At the same time, SJSW shows a relatively strong integration in the institutional set-up dimension due to large local minorities in the region (Makkonen et al., 2016, see fig. 4.2).

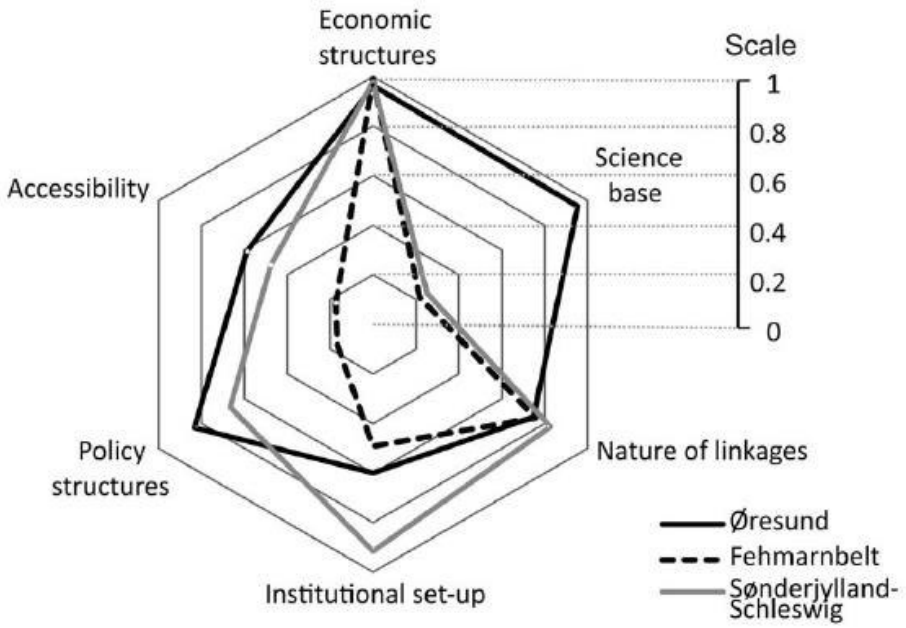


Figure 4.2 CBRIS integration scores in 6 dimensions of Øresund, Fehmarnbelt and Sønderjylland-Schleswig region. Source: Makkonen et al (2016).

In terms of the policy structure dimension, SJSW's score is relatively high compared to the neighbouring Fehmarnbelt region whilst still below the Öresund Region's score. Their method used to estimate policy structure integration within a cross-border region by using shared policy goal indices has been criticised in the theoretical contribution (section 2.5). At the same time, these results are the basis for the empirical interest of this thesis.
The results of the empirical analysis presented in the following section will thus show to what extent Makkonen et al's (2016) findings on the policy structure integration in the region are reflected by the case of a specific cross-border instrument, imbedded in the policy mix targeting a specific industry in this region.

4.2 Analysis

The results of the analysis will be presented according to the methodological steps presented in the previous chapter, and thus according to research questions 2 and 3, starting with the results of the document analysis (section 4.2.1) before proceeding to the results of the field research for the case study (section 4.2.2).

4.2.1 Document Analysis

Table 1 Analysed policy strategy documents primarily addressing cleantech policies or cross-border policies with a geographical focus directly including and affecting the case study region SJSW

No.	**Strategy**	**governance level design**	**source**
1	Collaboration agreement of region SJSW	Cross-border	(Sønderjylland-Schleswig, 2017a)
2	Growth and development strategy RSD	regional	(Syddanmark, 2015)
3	Development strategy SH 2030	regional	(Schleswig-Holstein, 2017)
4	Regional Innovation Strategy (RIS3) SH	regional	(Schleswig-Holstein, 2014)
5	Plan for German-Danish collaboration of the region SH	regional	(Schleswig-Holstein, 2015b)
6	Joint minister declaration on the development of the German-Danish borderlands	National (DK)/regional (GER)	(Engelbrecht and Albig, 2015)
7	Danish export strategy for the energy related industries	national	(Ervhervsministeriet et al., 2017)
8	Joint declaration on continued regional collaboration between RSD and SH	regional (both)	(Syddenmark and Schleswig-Holstein, 2017c)
9	Year-plan for regional collaboration between RSD and SH	regional (both)	(Syddenmark and Schleswig-Holstein, 2017a)
10	Results of 10 years regional collaboration between RSD and SH	regional (both)	(Syddenmark and Schleswig-Holstein, 2017b)
11	Cooperation programme INTERREG 5a Germany-Denmark	regional (both)	(5a, 2014)
12	Regional cluster strategy SH	regional	(Schleswig-Holstein, 2015a)

Cross-border strategies' consistency and coherence of processes

The strategy papers were selected for the analysis in case they were addressing cleantech and/or cross-border objectives while focussing on the SJSW cross-border region geographically. Table 1 provides an overview (more detailed in AppA). The documents 9 and 10 are connected as part of the joint declaration on continued regional collaboration between RSD and SH (8). All other strategy papers stand for single strategies. Addressing research question 2, all strategies were analysed regarding their emphasis on cross-border and cleantech objectives.

As the overview indicates, most strategies directly relevant to the SJSW's cleantech industry are designed on the regional levels of the federal state of SH and RSD in Denmark. The only actual strategy by a cross-border organisation (strategy 1) does not set distinct goals for the cleantech industry. Its economic objectives are formulated rather fuzzy emphasising the importance of knowledge and technological exchange across the border (AppA2).

On the regional level, the documents can be divided in individual (strategies 2-5, and 7) and joint strategies (strategies 6,8 and 11). In their individual regional strategies, both RSD and SH target the reduction of CO2 emissions by 40% compared to 1990 by 2020. In their industrial, smart specialisation strategies, they clearly target similar industries. While RSD highlights the cleantech fields of energy efficiency and offshore energy, SH targets renewable energies more broadly, as well as the bio-economy while also highlighting energy efficiency (AppA2f). Both regions clearly show that they are willing to do a substantial effort to reach their carbon-emission reduction targets. At the same time, strategies 2-5 similarly emphasise the importance of supporting their cleantech policy objectives in renewable energies and power electronics (energy efficiency) with their cross-border objectives, as they highlight the joint strategies 8 and 11, and the use of cluster instruments (e.g. in instrument 12 in SH) (AppA5 ff).

Interestingly, this consistent strategy making on the regional level is not reflected in a politically motivated joint minister declaration (strategy 6) between DK and SH that does not name any of the cleantech related cross-border objectives, but rather employment, taxes, education and infrastructure (AppA5). Most cited in the regional strategies is the joint agreement between RSD and SH with its objectives (strategies 8-10) that aim at increasing the cross-border R&D activities and cluster development within the renewables and the power electronics field (AppA5). This strategy becomes more specific as it refers to distinct INTERREG instruments that illustrate how the objectives are meant to be reached, and the overall INTERREG 5a Germany/Denmark strategy (11), particularly, naming instruments 1, 2 and 16 in the year-plan for 2017/18 (AppA5 ff). The year-plan will further be renewed on an annual basis to keep it flexible and up-to-date.

A growing comprehensiveness of the cross-border strategies is indicated by the new Danish export strategy for the energy-related industries, which highlights Germany as a particularly targeted marked for the energy efficiency segment (AppA5). Generally, as AppA shows, the strategies differ in their time of validity quite significantly.

On the regional Danish side the strategies are more integrated (in strategy 2), whereas the German side has multiple strategies formulating similar objectives (strategies 3-5). However, taken together, with a few exceptions that may relate to different times of implementation, the strategies on both sides of the border show a high degree of first level consistency in terms of their cross-border and cleantech objectives. Further, looking at the policy-processes, the results indicate that there has been a trend towards more comprehensive strategies in recent years.

Table 2 Analysed primary cross-border cleantech policy instruments relevant to the SJSW region

No.	primary cross-border cleantech Instrument	governance level implementation	source
1	FURGY Clean Innovation (INTERREG 5A)	cross-border/ regional	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)
2	RELIABLES Offshore (INTERREG 5A)	cross-border/ regional	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)
3	SPICE (INTERREG 5A)	cross-border/regional	(Interreg 5a, 2017)
4	RollFlex (INTERREG 5A)	cross-border/regional	(Interreg 5a, 2017)
5	PE:Region (INTERREG 5A)	cross-border/ regional	(Interreg 5a, 2017)
6	LBL2 (INTERREG 5A)	cross-border/ regional	(Interreg 5a, 2017)
7	carpeDIEM (INTERREG 5A)	cross-border/ regional	(Interreg 5a, 2017)
16	Northern Connections (INTERREG North Sea Region)	cross-border national	(Region, 2017b)

Table 3 Analysed primary regional cleantech cluster instruments relevant to the SJSW region

No.	primary regional cleantech cluster Instrument	governance level implementation	source
8	CLEAN	national (DK)	(REG X, 2015a)
9	Offshoreenergy.dk	national (DK)	(REG X, 2015b)
10	EE.SH Netzwerkagentur Erneuerbare Energien Schleswig-Holstein	regional (SH)	(Schleswig-Holstein, 2015a; WTSH, 2016)
11	EEK.SH Competence Centre for Renewable Energies and Climate Change	Regional (SH)	(EEK.SH, 2017; WTSH, 2016)
12	windcomm Schleswig-holstein e.V.	Regional (SH)	(Schleswig-Holstein, 2015a; windcomm, n.d.),
13	watt_2.0	Regional (SH)	(Schleswig-Holstein, 2015a; watt_2.0, n.d.)
14	WTSH	Regional (SH)	(WTSH, 2016; WTSH, nd)
15	ARGE Netz	National (GER)	(ARGE NETZ, 2016; Schleswig-Holstein, 2015a)

Cross-border instruments' consistency and coherence of processes

In the instrument analysis, 16 instruments have been chosen for closer investigation. Table 2 and 3 provide an overview of the instruments (more detailed in AppA8 ff). Most obviously, the analysis showed that all actual cross-border instruments relevant to the SJSW region are associated with the INTERREG programmes 5a Germany-Denmark and North Sea Region (one of them). They are all systemic instruments with a primary purpose of information as they are project based cluster instruments targeting the respective triple helix actors, such as universities, municipality administrations and companies of different segments of the cleantech industries in the SJSW region (AppA8 f). However, looking at the implementing actors defined as the project partners within each instrument, private companies only appear very seldom (AppA8 ff). The duration of all instrument's validity is within the range of the current INTERREG funding period (2014-2020).

Next to these cross-border cluster instruments, naturally a diversity of regional and national instruments exists. To limit the scope of the document analysis, the instruments presented in table 3 are only other explicit cluster instruments, often referring to cluster organisations, that explicitly address the cleantech industries in their service portfolio. For this reason, IHK, a major project partner in FCI is not listed as they address all industries equally. The analysis shows that several cleantech cluster instruments targeting partly similar or even the same actors can be found in SH. In RSD, the amount of cluster-instruments is limited to two, both of which are focussing on distinct segments of the cleantech industries, and building upon a national network of members (AppA8 ff). The legal forms differ widely in SH from being projects with limited duration to being established state-funded organisations, while in RSD both instruments are private-public partnerships (AppA8 ff). Overall the analysis shows a clearly more segmented regional policy mix in SH than in RSD, that may create problems in terms of consistency and in the coherence of the policy processes regarding the cooperation of the same organisations in horizontal cross-border activities.

These findings will be further put into perspective by the case study of the FCI instrument that will be elaborated upon in the following section.

4.2.2 Analysis of Field Research

The subsequent paragraphs present the analysis of the data that was generated during the field research on the case study of the FCI instrument. It is structured by the code-plan's main categories 'consistency of cross-border policy elements', 'coherence of cross-border policy processes', 'cross-border policy credibility' and 'cross-border policy comprehensiveness'. The results allow a nuanced view of the cross-border policy mix from the perspective of the FCI instrument. References and quotes refer to the origin of certain results corresponding to the sources presented in AppC. If not specified elsewhere, all references in *this* section refer to AppC table 3.

Consistency of cross-border policy elements

In terms of first level consistency, thus the consistency of strategies, the field research on the FCI instrument supported the results of the document analysis. It is important to highlight though that the field research was primarily focussing on the consistency of strategies and other instruments with FCI. Thus, questions into first level consistency were not central to the field

research, which is furthermore reflected by the weight of this aspect in the interview guidances (AppB).
On the Danish region's side, RSD is by law assigned to establish a growth forum, in which different political, public and private actors negotiate the cleantech cluster strategy objectives and instruments to achieve them (1.1.5). On the German side, in SH, several parallel strategies (strategies 3,4 & 12) leave the impression of a slightly chaotic situation among the Danish actors involved in FCI (1.1.1). However, as already found in the document analysis, also the field research showed that both regions manage to consistently derive objectives for the cleantech industries from their domestic strategies to the joint cross-border strategies building upon a well-established collaboration on the strategy level (strategies 8 and 9, 1.1.2, 1.1.3). Further, interviewee III (RSD) has confirmed that they have become more aware of making cross-border strategies since the last collaboration agreement with SH was achieved ten years ago (1.1.4). This is also underlined on the SH policy-making level as interviewee IV highlights future strategy-making in the context of a Jutland-corridor cooperation (1.1.6).
With regards to second level consistency, the two regions show very different patterns, arguably strongly affecting interactions related to FCI. On the Danish side, since the fusion of two former cluster organisations in 2014, CLEAN takes care of the whole energy efficiency segment within the cleantech industries, not only for RSD but for the whole country (1.2.3). Local initiatives and administrations in the SJSW region like Project Zero, a cluster initiative of Sønderborg municipality, are members of CLEAN which facilitates their coordination (1.2.3, 1.2.10). CLEAN is to large parts funded by its member companies privately, as well as publicly, which makes them obliged to offer valuable cluster services to their members (1.2.12). On the German side, there are several cluster or cluster-similar instruments addressing the energy efficiency segment of the cleantech industry administered by organisations such as WTSH, EE.SH, WATT2.0 or EEK.SH (among instruments 10-14). This situation leads to confusion among Danish collaboration partners in FCI on the instrument level (1.2.2). Even though generally the cooperation works quite well, these parallel structures are regarded problematic by German actors involved in FCI, like IHK and WTSH themselves, as goal conflicts and personal animosities may hinder cooperation among the organisations occasionally (1.2.5, 2.2.4). Also, the strategy-making RSD confirm this impression despite observing a growing consistency among cluster instruments in the energy efficiency segment, also on the German side (1.2.8). As highlighted in the document analysis, the different legal types of the organisations behind the cluster instruments, and thus their funding sources differ strongly in SH. In the cross-border context of FCI, this leads to inconsistencies among the project partners where IHK and WTSH are publicly funded and have different networks of member firms (1.2.4). The publicly initiated cluster organisation for renewables and energy efficiency in SH (instrument 10) is not designed and funded to engage in cross-border activities, and thus not willing to collaborate with FCI at all (1.2.6). Another cluster organisation (instrument 14) collaborates but does not have the financial support of SH even though their business model would be more consistent with the Danish counterpart CLEAN (1.2.7, 1.2.11). These structural inconsistencies between the Danish and German cluster organisations related to FCI also affect the coordination of FCI with other INTERREG cluster instruments for the energy efficiency segment, like PE:Region (instrument 5), as "(…) it does not make it easier to coordinate an [INTERREG] project with another INTERREG project than with any other program" (Interviewee I, 1.2.9).

The inconsistencies between regional and cross-border regional instruments, described above, are further reflected by third level inconsistencies in SH. While the joint strategies highlight the importance of actual cluster integration across the border, this is not reflected by the comparably segmented instrument mix on the SH side of the SJSW region (1.3.4). The actual cross-border instruments are either rather unimportant for the SH administration or they are not allowed to talk about future funding plans (1.3.7, 1.1.6). On the Danish side, the problem is less apparent as RSD regards FCI and PE:Region, though being cross-border instruments, as explicitly embedded in their regional strategy and coordination with CLEAN works well (1.3.8, 1.3.9, 1.3.10, 1.3.11).

Coherence of cross-border policy processes

As already indicated in the previous section an important second level inconsistency between the German and the Danish cluster organisations involved in FCI could be tracked back to legal types of instruments related to different types of funding. The analysis suggests that the major reason for this pattern are incoherencies in policy-making. In Denmark, cluster organisations like CLEAN and Offshoreenergy.dk are designed being dependent on private funding to receive any public money (2.2.2). In its early stages, CLEAN once had a cross-border focus, but withdraw these activities as public funding turned out to only be available for Danish firms. They reengaged in cross-border cluster activities only when becoming a project partner in FCI, but could still built upon the knowledge from the former cross-border policy-making processes they had been involved in (2.1.3).

In Germany, the federal state region of SH has designed their own cluster organisation that is entirely publicly funded. This kind of policy making, however, created incentives for the organisation to be rather indifferent towards cross-border activities, as interviewee I suggests (2.1.1, 2.2.1). As the organisations offering cluster services involved in FCI are funded from public money, this incoherence in policy-making results in incoherence in operating procedures (policy style), affecting how well FCI can be implemented on the German side (2.3.1-3).

Nevertheless, the INTERREG program has given a frame in which cross-border instruments like FCI can be designed in the form of coordinated working packages that are shared among the project partners (2.2.5). On both sides of the border, the initial impulse to engage in cross-border collaboration came from the implementing organisations (CLEAN and IHK/WTSH). Only in a second step RSD and SH got involved after the implementing organisations had approached them for co-funding. Only after this second step, the cross-border engagement had been implemented in the strategies of the respective regions (2.1.2, 2.1.6, 2.1.8). Thus, the initiative for cross-border activities comes from the implementing actors. Corresponding to this, experiences in the making of cross-border instruments have mainly been made on the local level, such as with instruments related to the formally so-called SJSW cooperation (strategy 1), or through instruments from former INTERREG projects, such as the old Furgy project from 2007 to 2013, but not on the levels of SH and RSD. To reach a higher level of cross-border cluster integration within the cleantech clusters, meaning for example that private companies from both regions would become involved as actual project partners in the cluster instrument, SH and RSD would need to get more involved in the policy-making and financial commitment for cross-border cluster instruments (2.1.5).

Thus, analysis shows that INTERREG has been important to establish cross-border policy structures in the SJSW region, but it does not suffice to further increase the coherence of policy processes in the cross-border region. Further, the implementation of INTERREG projects, like

FCI, may face serious problems due to its extensively administrative nature. As interviewee I notes, the implementation of FCI is too slow to really reach the companies of the region effectively, due to the administrative work associated with it (2.2.3). Going beyond INTERREG, recently a round table meeting of RSD with all their regional cluster organisations and WTSH has been launched to discuss possible future synergies and forms of cooperation with the regional clusters in SH (2.1.7, 2.2.6). These initiatives whatsoever are restricted to single events or conferences.
To put the results on coherence of processes in perspective, it is important to note that the cross-border policy processes within the energy efficiency segment are the most coordinated and developed of all cross-border cluster related processes in the region (2.2.7), confirming the initial assumption that influenced the choice of this thesis' case study.

Cross-border policy credibility
In the case of FCI and the other cross-border cluster instruments, a major drawback to the credibility of the cross-border policy mix is the project-based character of all instruments coupled with the fact that money from national and regional funds can only be used within the national confines (3.1.7). Thus, while the strategies are well designed, opening opportunities for economically sustainable instruments, this is not adequately translated to the instrument level due to the reasons named above. This is acknowledged both on the Danish, as well as on the German side (3.1.1, 3.1.4). In effect, the implementing actors often do not really believe that the strategies developed by the policy-makers make much of a difference (3.1.6, 3.1.2). This structural credibility problem is reflected by the fact that the funding for the projects is restricted to the INTERREG program period. Though INTERREG requires projects to be economically sustainable and autonomous from EU-funding, even in a regional context this usually does not happen, particularly not regarding cluster instruments, as III highlights (3.1.10). While the cluster instruments like CLEAN on the Danish side are doing comparably well in this respect, the future of a cross-border instrument like FCI is highly dependent on external support, and thus insecure.
Despite these general drawbacks, credibility appears to vary significantly across the cross-border region. For the areas very close to the border in the SJSW region where big minorities live it is much higher than around the administrative centres of the bordering regions, Kiel in SH and Vejle in RSD (3.1.9). Further, credibility of the instruments is generally higher in Denmark, as Danish companies have a natural interest in cooperating with the big neighbouring country, while growing German companies do not necessarily start looking for partners in a small economy like Denmark (3.1.11).

Cross-border policy comprehensiveness
In the context of FCI, cross-border policy comprehensiveness mainly refers to the question whether the cross-border instrument-mix should or could go beyond systemic, information type cluster-instruments. Compared to other industrial fields, the cross-policy mix for the cleantech industries in SJSW is well developed in relative terms thanks to INTERREG, and instruments like PE:Region or FCI (4.1.2). All actors agree that EU programs like INTERREG and HORIZON2020 have made the regions more aware of cross-border policies, making processes more comprehensive, and without them there would be no comparable cross-border instruments at all (4.1.4, 4.1.5, 4.1.9, 4.1.10, 4.2.2, 4.2.4). Even though the actors on both sides of the border would clearly embrace the idea of having more room for action, the nationally focussed funding

structures would currently not allow to establish economic instruments and go beyond "soft" instruments like clusters (4.1.1, 4.1.3). Whatsoever, according to a study by IHK Flensburg, the companies in the SJSW region would indeed demand more compressive support for their cross-border activities (4.1.6). There are different visions for how to establish a more comprehensive policy mix. From the Danish perspective, this would require a coordination processes among both SH and RSD resulting in a joint funding of instruments behind their strategies under simpler and more accessible conditions than in INTERREG, making it more attractive for companies to take part in the projects. This structure would need to be supported by one strong actor on any side of the border and one joint cross-border cluster organisation (4.1.7, 4.1.8). For the implementing actors of FCI on the German side such a development is still far away. For them as a starting point, the demand for a more comprehensive cross-border collaboration among firms and the whole society would initially need to be triggered by soft instruments improving mutual language skills and making companies discover the existing synergies. Only then a political process would gradually be able to change the cross-border policy structures towards a more comprehensive mix at some point in time (4.1.11).

4.3 Discussion

The subsequently following discussion will take its point of departure in discussing how the findings of this study, as presented in chapter 3, contribute to reaching the targeted research objectives in answering the initially asked research questions. As question 2 has been answered along the way descriptively, the discussion will start from question 3, elaborating on how the results of the case study provide new insights in the policy structure integration of the SJSW region's CBRIS (4.3.1).
Stemming from the experiences of this study, the discussion will then head back to research question 1 to discuss from a theoretical point of view advantages and limitation of an empirical application of the developed cross-border policy mix framework on the integration of cross-border policy structures (4.3.2).

4.3.1 Policy structure integration in the Sønderjylland-Schleswig region

As stated in section 2.5, the cross-border policy mix concept would assume an increasing degree of policy structure integration in a situation of increasing consistency of policy elements. The analysis has shown in this respect that first level consistency is quite well established in the SJSW region's cleantech policy. The strategies of both regions share similar goals regarding the reduction of carbon emissions, and target the support of similar cleantech industries. These commonalities in the domestic strategies have been consistently adopted in a joint strategy for the cross-border cooperation between the two regions of RSD and SH. The strategy has been renewed recently, in 2017, becoming more specific with respect to the targeted industrial segments, referring to distinct instruments such as FCI as a cross-border cluster in the energy efficiency segment.

These findings suggest that first level consistency in the cross-border region has increased over the last ten years, which accordingly may be interpreted as a positive push towards the integration of policy structures.
Regarding the distinct cluster instruments that have been implemented to support the cleantech industries on both sides of the border, the analysis has shown differentiated patterns on either side. While on the Danish side, in RSD, a country wide cluster organisation for the energy efficiency segment, and similarly for the offshore segment, has been established, on the German side, in SH, different organisations offer similar cluster services for the same cleantech segments. These parallel structures are regarded problematic both by the induvial implementing actors in SH as well as in the context of a cross-border instrument, like FCI, in RSD. The second level inconsistencies between instruments in SH are further increased, as the public administration has been actively supporting the parallel structures by founding their own cluster organisations, partly based on projects. While the funding of these cluster instruments is entirely public, another cluster organisation in SH builds largely upon private funding. In FCI, however, none of these organisations has directly been integrated as project partner. Instead, two other publicly funded member organisations have been assigned this task. Despite coordination mechanisms that have been put in place between the cluster instruments in SH, the segmented instrument mix puts pressure on horizontal second level consistency. The case study of FCI indicates that there is a certain risk of uncoordinated instrument "interactions between different instruments targeting the same actors in the same process" (Flanagan et al., 2011) in SH. Further, the analysis suggests that the inner-SH coordination mechanisms have not directly been translated to the cross-border level, as some responsible organisations do not wish to engage in cross-border policy coordination activities with the project partners in FCI.
Taken together, this part of the case study implies that second level inconsistencies on the instrument level in SH, may create even stronger inconsistencies horizontally on an imaginary cross-border governance level. In other words, while policy structure integration in the SJSW region may have taken place on the strategy level between SH and RSD, it has certainly not to the same degree on the instrument level. The inconsistencies within cluster instruments in SH and between SH and RSD rather refer to a significantly lower level of policy structure integration on the instrument level.
This is also well reflected by the attested vertical third level inconsistency, as an overall measure of consistency between all the elements put in place. Empirically, in the current situation, the joint objectives of the strategy of SH and RSD are not followed up upon by a sufficiently coordinated instrument mix. Third level consistency in this context can be regarded as a static measure of policy structure integration on the element level.
For the point of time of the investigation, the case study of the FCI instrument thus indicates a weak overall policy structure integration on the element level for the SJSW region cleantech industries.
Looking at the coherence of policy processes, the rather static perspective of element consistencies is enriched by the dimension of time. This is particularly important with respect to the dynamic nature of policy structure integration. Asking how coherent policy-making and policy implementation processes are, and how this coherence evolves over time, gives further important insights into the direction of policy structure integration.
In this regard, the case of FCI shows a coherent pattern on both sides of the border. Both in SH and RSD the initiative of engaging in the INTERREG project cluster instrument FCI came from the implementing actors. Strategy-making has only taken place as response to this initial

impulse. Thus, the policy-making on the EU-level has resulted in adaptation processes on both regional governance levels. This, in effect, as discussed above, has led to higher first level consistency of elements across the border. At the same time, however, the policy processes did not lead to a higher second and third level consistency of elements. This is reflected by the fact, that cross-border instrument-making is basically non-existent on the level of SH and RSD, who only influence the instrument design once the instruments have been assigned to certain regional organisations.

To improve policy structure integration both regional administrations would need to engage in coordinated policy-making processes for cross-border instruments, and furthermore be able to invest in these instruments financially. This in return requires the national funding legislation for economic policies to become more flexible with regards to the funding of cross-border instruments. In the current state, almost all cross-border policy processes relate to the INTERREG projects. Exceptions are initiatives for the gradual coordination of existing cluster activities, like between WTSH and the Danish cluster organisations (see section 4.2). Accordingly, policy structure integration in the SJSW region is currently limited to the independent activities of actors on the respective regional implementation levels.

This current limitation of policy structure integration in the SJSW region is also well reflected by the credibility of the policy mix pointing towards a certain frustration among implementing actors regarding cross-border activities. In the case of FCI, this frustration was indicated by WTSH on the Germans side, with II acknowledging that there is no way of changing the cross-border policy structures towards stronger integration for an implementing organisation like WTSH currently (see section 4.2). While the Danish side actor I shared this frustration about funding possibilities and legislative limitations for integration, he also highlighted that despite this set-up there was still a certain potential for more cooperation within the present structure. This corresponds to Rogge and Reichardt (2016) noting that policy integration is only one tool of increasing coherence of policy processes, the other being coordination.

This could be interpreted as a slightly more hopeful attitude towards the general policy mix on the Danish side. More so, it corresponds to the credibility of the cross-border strategies being higher for the Danish actors, as their interest in cooperation with German companies is naturally higher. Credibility may not directly imply anything about the current state of policy structure integration. Nevertheless, it can shed light on how willing and believing the policy-making and -implementing actors on either side of the border are to further integrate the structures in the future.

In this context, it is interesting to reflect upon the fact, that no German institution contacted, accepted to give a recorded interview. These field observations could suggest that the German governance structure in this case does not promote institutional change impulses originating vertically from a lower level as the actors where obviously avoiding sharing their opinions openly to not risk sanctions for critical opinions. In RSD both actors, on the strategy and on the instrument level, did not show any signs of this behaviour, indicating a more reciprocal vertical relationship to the higher governance level than in SH. Thus, the field research on FCI indicated that the credibility of the cross-border policy mix is put under stress in SH by a more hierarchical governance structure, impeding a transition towards stronger integrated policy structures. Parts of the disappointment of II at WTSH was further directed towards the EU level for not having been able to live up to their promising strategy goals, for example within HORIZON2020, by developing financially more powerful and less administrative instruments than INTERREG.

Overall, the existing funding structures on both sides of the border also relate to what Lundquist and Trippl (2013, p.456) call lack of hard "cross-border institutions", while the power relations in the governance structure of SH, translate to a "lack of cross-border leadership" (ibid.), lowering the credibility of the cross-border policy mix. Here the findings clearly enter the CBRIS dimension of institutional set-up integration, at least within the policy sub-system. The findings on cross-border policy credibility further reflect that there is no sufficient belief among the relevant actors that an increased policy structure integration may be achievable.

Taking the findings on consistency of elements, coherence of processes and credibility it does not surprise that the SJSW regions policy mix does not reach a high degree of comprehensiveness. A more comprehensive mix would certainly need to include instruments going beyond a systemic purpose and the information type, such as economic or regulatory instruments. Both types, however, will require a political process changing the present funding and regulatory framework for cross-border policy-making in SH and RSD. With regards to the current instrument mix, the cluster instruments face some problems in terms of comprehensiveness as well. Taking the case of FCI, and evaluating it based on the abstract design features suggested by Rogge and Reichardt (2016), the analysis has shown that the INTERREG instruments show a lack of predictability, due to their project-based nature, limiting the plannable horizon for participating organisations and companies to a few years only. Further, the field research suggests that they lack flexibility, associated with large administrative efforts in their implementation.

Cross-border policy comprehensiveness in the light of these interpretations is only weakly developed, mirroring an overall weakly integrated cross-border policy structure.

Having obtained these results it is important to reflect upon to what degree they can be generalized to the whole CBRIS, or to what degree they only reflect the narrow case of the energy efficiency segment of the cleantech industries, that FCI represents here. This is particularly true when trying to put them into perspective with former results on the integration of the SJSW region.

An important aspect is the fact that the energy efficiency segment has indeed, as assumed in chapter 3, been called the most integrated industrial cluster field in the cross-border area by several actors during the field research. If this is only close to true, the assumption may be drawn from it, that the integration in other segments and industrial fields outside the cleantech industries is less developed than in this segment. With this assumption made, any generalisation derived from the findings on policy structure integration around the FCI instrument, would arguably be rather conservative towards the lower end, overestimating the actual degree of policy structure integration.

Regarding the qualitative methods chosen to collect the data from only a few actors, any conclusion drawn from this case study needs to be critically assessed by further, and possibly more comprehensive studies. If a generalisation was made departing from this analysis, it would suggest that the policy structure integration in the SJSW region's CBRIS is at most weakly integrated. This clearly contrasts with Makkonen et al. (2016) describing policy structure integration in the region with an index score of over 0.6 on a scale to 1, and an institutional set up integration even reaching over 0.9. Clearly, their institutional set-up index, building upon the share of minorities in both regions cannot compare to the alternate findings on institutional distance within the policy-subsystem of the SJSW CBRIS presented in this thesis. Nevertheless, they indicate that qualitative studies on the institutional set-up integration of the CBRIS will most likely arrive at strongly differing conclusions than Makkonen et al (2016).

This reflects the value of studying the same phenomenon with different methodological approaches, highlighted by the pragmatic worldview taken in by this thesis. The findings of this thesis resemble those of Van den Broek and Smulders (2015) on the Lower-Rhine Venlo region both empirically and methodologically, highlighting the importance of qualitative single case study investigations in the CBRIS literature and their complementarity to quantitative studies.
However, it is important to note that this study is not comparative. Answering research question 3 the findings described above merely show how the FCI instrument reflects policy structure integration in the region. To really put the results obtained here into perspective with the results of Makkonen et al., a comparative analysis of the SJSW region with the Oresund region between Denmark and Sweden, the Fehmarnbelt region in the east between Denmark and Germany, or other comparable cases would be needed.

4.3.2 Applying the cross-border policy mix framework

After having discussed the empirical findings of the case study, this section leads back to research question 1, and will elaborate on the advantages and limitations of applying the cross-border policy mix concept, developed in section 2.5.
Regarding the advantages, the framework certainly allows to go beyond the depth of former frameworks. As shown in section 2.3, the CBRIS literature does not specify the policy structure integration dimension other than defining its variation along institutional distance (in the policy sub-system), reflected by cross-border characteristics of hard and soft institutions, as well as policy leadership, legitimacy and support by the respective nation states (Lundquist and Trippl, 2013). As the empirical application in this thesis has revealed, the cross-border policy mix framework can indeed recognize these elements. Nevertheless, it also goes clearly beyond this by defining categories and elements that were hiding behind these 'rather black-boxed' terms in the CBRIS framework. This is achieved, for example, by defining different types of consistencies between different elements of the policy mix, specifying why there is institutional distance between two adjacent regions and among which governance dimensions. As indicated in section 4.3.1, this acknowledges that the cross-border policy mix concept not only investigates the policy structure dimension of the CBRIS, but also the policy sub-system related part of the institutional set-up dimension, making-it even more interesting when putting findings into perspective that build upon a quantitative approach.
A question that naturally arises from this thesis is if it makes sense to investigate a single dimension of the CBRIS framework. As already noted above, a pragmatic worldview clearly advocates the importance of taking into consideration findings building upon different methodological approaches. As Makkonen et al (2016) note, the investigation of some dimensions of a CBRIS, such as institutional set-up, nature of linkages or policy structures may benefit from a qualitative approach, while the others may be easier to investigate in quantitative manner. A holistic study of all dimensions with a single method seems at least difficult in this light. However, the right avenue for future studies of CBRIS integration should be mixed-methods studies. This contribution makes sense in this light as it suggests a possible way to investigate the more intangible dimensions of a CBRIS.
Using the policy mix for sustainability transitions concept and transform it to a policy mix for CBRIS policy structure integration by simply adopting the same framework elements, may initially seem disputable. At the same time, returning to a quote already presented in the

theoretical contribution (chapter 2.5), this was exactly Rogge and Reichardt's (2016, p.1632) initial intention: "(…) the integration of the policy mix concept with other research approaches (…) may further sharpen the analytical clarity and policy advise of such approaches (…)". While the focus of the original framework were sustainability transitions, the case study in which the framework was used here, showed that it is well applicable for an investigation of cross-border policy structure integration, arguably, in itself an aspect of sustainability transitions.

It showed that, when investigating the integration of CBRIS', deriving policy advice from studying the actual, current policy mix may be a very useful approach. This becomes even more apparent regarding the fact that: "(…) in the real world it is probably very hard for most cross-border regions to meet the final stage [of integration] in all dimensions" (Lundquist and Trippl, 2013, p. 458). As most cross-border regions, particularly those outside the developed parts of the world will show a very weak integration across many CBRIS dimensions, the policy structure dimension may be a good point to start an investigation. Arguably, besides the accessibility dimension, the policy structure dimensions is the one being addressed by national and regional policy-makers and politicians the easiest through changes in strategies, regulations or investments in specific instruments and infrastructure. Only when both nationally embedded bordering regions have done their "homework" (AppC, table 3, 3.1.8) in reaching consistency of cross-border policy elements and coherence of processes, as interviewee II has put it, further policy steps addressing other dimensions with a more comprehensive instrument mix can be taken into consideration.

In other words, the cross-border policy mix concept proves to be a valuable tool for future studies on cross-border policy structure integration in different parts of the world. A future avenue for studies using the cross-border policy mix concept could for example be similar investigations in other western European countries or the European periphery. Methodologically, as highlighted several times, future studies could benefit from applying the framework in an exploratory or explanatory mixed method designs.

5 Conclusion

This study aimed at developing a cross-border policy mix framework to investigate the integration of a CBRIS' policy structure dimension. It has done so by integrating the CBRIS framework with the policy mix concept. The new framework has been applied and tested in an empirical case study of the Danish-German SJSW region. Based on the experiences of the empirical application, it has proved to be a feasible framework for future studies focussing on the integration of policy structures and the institutional set-up within the policy sub-system of a CBRIS. Regarded from a pragmatic worldview, such contributions will be most valuable as parts of more comprehensive mixed method designs investigating several dimensions of CBRIS integration.

The empirical objective of this study has in this sense been – with help of the developed cross-border policy mix framework– to investigate how a specific cross-border instrument interacts with the broader cross-border policy mix and affects cross-border policy integration. The policy mix for the cleantech industry of the SJSW region is characterised by a rather well designed and coordinated strategy, but is only supplemented by few systemic cross-border instruments, all of which are clusters designed in the context of the EU's INTERREG program. Further, the cleantech industries are addressed by regional cluster instruments on the level of SH and RSD. The case study of FCI, a cross-border cleantech cluster instrument, provided new indicative insights into the integration of policy structures in the SJSW region. Unlike a former study measuring policy structure integration with a quantitative index, this thesis concludes that the policy structures and the institutional set-up within the policy-subsystem of the region are at most weakly integrated. The thesis arrives at this conclusion, finding a significant lack of second and third level element consistency between the cross-border strategies and instruments, and regional elements, particularly in SH. Further, the coherence of processes in policy making and implementation between SH and RSD is strongly limited by regulatory barriers. The credibility of the cross-border policy mix is generally low, while it differs widely across the policy sub-systems actors in the SJSW region. In consequence, the policy mix does currently not reach a high level of comprehensiveness, directly reflecting the weak policy structure integration of the region.

The results obtained, can have practical implications for future policy-making and implementation on the regional levels of SH and RSD, and their respective nations. In the current situation, the coordination of implementation processes among the existing instruments can still be improved significantly by starting a dialogue between regional and cross-border cluster instruments, especially in SH. In the long-run, increasing policy structure integration in the SJSW region will require a stronger national and regional commitment to fund cross-border instruments, independently from INTERREG and HORIZON2020, to reach the aims of the existing cross-border strategies. Even if this seems like a utopia today, it should still be the aim for future policy-processes. In the short-run, especially the German side should increasingly apply domestic policies to stimulate the interest of local companies in cooperation with their Danish counterparts. Besides intensifying the already implemented cluster cooperation,

instruments targeting the learning of the other language and labour market mobility can take in an important role in this respect.

Future research may find an interest in applying the cross-border policy mix concept in more comprehensive mixed method studies on several dimensions of CBRIS integration. Whilst they would certainly require an immersive effort for the conducting researchers, comparative applications of the framework in different CBRIS could help to put the findings of this study further into perspective. Of interests could in this light be investigations on policy structure integration between other bordering countries with less federalist governance structures, or between countries with significantly different levels of development.

Literature

ARGE NETZ. (2016). Energie intelligent vernetzt, ARGE NETZ, Available online: https://www.arge-netz.de/wir/fakten.html [Accessed 12.04.2017].

Asheim, B. & Coenen, L. (2005). Knowledge bases and regional innovation systems: Comparing Nordic clusters. *Research Policy* [e-journal], vol. 34, no. 8, Available online: http://www.sciencedirect.com/science/article/pii/S0048733305001101 [Accessed 06.12.2016].

Asheim, B., Coenen, L., Moodysson, J. & Vang, L. (2005). Regional Innovation System Policy: a Knowledge-based Approach, working paper, no. 2005/13, Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE), Lund University.

Asheim, B. & Gertler, M. S. (2005). The Geography of Innovation, in Fagerberg, J., Mowery, D. C. & Nelson, R. R. (eds.), *The Oxford Handbook of Innovation,* Oxford: Oxford University Press, pp. 291-317.

Asheim, B., Smith, H. & Oughton, C. (2012). Regional Innovation Systems: Theory, Empirics and Policy. *Regional Studies* [e-journal], vol. 45, no. 7, Available online: http://www.tandfonline.com/doi/abs/10.1080/00343404.2011.596701 [Accessed 12.06.2017]

Bogner, A., Littig, B. & Menz, W. (2014). *Interviews mit Experten Eine praxisorientierte Einführung,* Wiesbaden: Springer.

Bortz, J. & Döring, N. 2006. Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften. Berlin: Springer Lehrbuch.

Boschma, R. (2005). Proximity and Innovation: A Critical Assessment. *Regional Studies* [e-journal], vol. 39, no. 1, Available online: http://dx.doi.org/10.1080/0034340052000320887 [Accessed 10.03.2017].

Creswell, J. W. (2014). *Research Design. Qualitative, Quantitative, & Mixed Method Approaches,* Los Angeles: Sage Publications, Inc.

Döring, N. & Bortz, J. (2016). Datenerhebung, in Bortz, J. & Döring, N. (eds.), *Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften,* Berlin: Springer Lehrbuch pp. 321-577.

European Comission. (2014). Cohesion policy 2014-2020, European Comission, Available online: http://ec.europa.eu/regional_policy/sources/docgener/panorama/pdf/mag48/mag48_en.pdf [Accessed 04.12.2016].

Edquist, C. (2005). Systems of Innovation. Perspektives and Challenges, in Fagerberg, J., Mowery, D. C. & Nelson, R. R. (eds.), *The Oxford Handbook of Innovation,* Oxford: Oxford University Press, pp. 181-208.

EEK.SH. (2017). Competence Centre, EEK.SH, Available online: http://www.eek-sh.de/en/competence-centre.html [Accessed 12.04.2017].

Engelbrecht, B. & Albig, T. (2015). Gemeinsame Ministererklärung zu Wachstum und Wirtschaftsentwicklung im Deutsch-Dänischen Grenzland [pdf], Available online: https://www.schleswig-holstein.de/DE/Home/Artikel/Downloads/150414_Deutsch_daenische_Ministererklaerung_deutsch.pdf?__blob=publicationFile&v=2 [Accessed 25.03.2017].

Ervhervsministeriet, Energi-, F.-o. K. & Udenrigsministeriet. (2017). Strategi for energiområdet [pdf], Available online: https://www.regeringen.dk/publikationer-og-aftaletekster/eksportstrategi-for-energiomraadet/ [Accessed 29.03.2017].

Flanagan, K., Uyarra, E. & Laranja, M. (2011). Reconceptualising the 'policy mix' for innovation. *Research Policy* [e-journal], vol. 40, no. 5, Available online: http://www.sciencedirect.com/science/article/pii/S0048733311000345 [Accessed 02.12.2016].

Grillitsch, M. & Trippl, M. (2016). Innovation Policies and New Regional Growth Paths: A place-based system failure framework, working paper, no. 2016/26, Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE) Lund University.

Häder, M. (2015). *Empirische Sozialforschung. Eine Einführung,* Wiesbaden: Springer VS.

Hansen, T. (2013). Bridging regional innovation: cross-border collaboration in the Øresund Region. *Geografisk Tidsskrift-Danish Journal of Geography* [e-journal], vol. 113, no. 1, Available online: through LUSEM University Library website http://www.lusem.lu.se/library [Accessed 24.10.2016].

Interreg 5a. (2014). Kooperationsprogramm unter dem Ziel „Europäische territoriale Zusammenarbeit" Interreg Deutschland-Danmark Interreg 5a, Available online: http://www.interreg5a.eu/wp-content/uploads/2016/09/Kooperationsprogramm_DE2.pdf [Accessed 29.03.2017].

Interreg 5a (2017). Projekte, Interreg 5a Available online: http://www.interreg5a.eu/projekte-ergebnisse/projektuebersicht/ [Accessed 25.03.2017].

Kern, F. & Howlett, M. (2009). Implementing transition management as policy reforms: a case study of the Dutch energy sector. *Policy Sciences* [e-journal], vol. 42, no. 4, Available online: http://dx.doi.org/10.1007/s11077-009-9099-x [Accessed 06.03.2017].

Kjedsen, C., Napier, G. & Campbell, J. (2009). Cleantech-styrkepositioner i Region Syddanmark [pdf], Available online:

http://www.danishwaterforum.dk/activities/Water_and_green_growth/cleantech%20styrkepositioner%20i%20region%20syddanmark_20091101.pdf [Accessed 10.04.2017].

Lundquist, K.-J. & Trippl, M. (2009). Towards Cross-Border Innovation Spaces. A theoretical analysis and empirical comparison of the Öresund region and the Centrope area, working paper, no. 2009/05, Institut für Regional- und Umweltwirtschaft, WU Vienna University of Economics and Business.

Lundquist, K.-J. & Trippl, M. (2013). Distance, Proximity and Types of Cross-border Innovation Systems: A Conceptual Analysis,. *Regional Studies* [e-journal], vol. 47, no. 3, Available online: through LUSEM University Library website http://www.lusem.lu.se/library [Accessed 24.10.2016].

Magro, E., Navarro, M. & Zabala-Iturriagagoitia, J. M. (2014). Coordination-Mix: The Hidden Face of STI Policy. *Review of Policy Research* [e-journal], vol. 31, no. 5, Available online: http://dx.doi.org/10.1111/ropr.12090 [Accessed 16.12.2016].

Makkonen, T. (2015). Scientific collaboration in the Danish–German border region of Southern Jutland–Schleswig. *Geografisk Tidsskrift-Danish Journal of Geography* [e-journal], vol. 115, no. 1, Available online: through LUSEM University Library website http://www.lusem.lu.se/library [Accessed 24.10.2016].

Makkonen, T. & Rohde, S. (2016). Cross-border regional innovation systems: conceptual backgrounds, empirical evidence and policy implications. *European Planning Studies* [e-journal], vol. 24, no. 9, Available online: through LUSEM University Library website http://www.lusem.lu.se/library [Accessed 03.11.2016].

Makkonen, T., Weidenfeld, A. & Williams, A. M. (2016). Cross-border regional innovation system integration: an analytical framework. *Tijdschrift voor Economische en Sociale Geografie* [e-journal], (accepted/in press), Available online: http://onlinelibrary.wiley.com/doi/10.1111/tesg.12223/epdf [Accessed 03.11.2016].

Malerba, F. (2005). Sectoral Systems: How and Why Innovation Differs across Sectors, in Fagerberg, J., Mowery, D. C. & Nelson, R. R. (eds.), *The Oxford Handbook of Innovation,* Oxford: Oxford University Press, pp. 380-406.

Mason, J. (2002). *Qualitative Researching* London: SAGE Publications Ltd

Mayring, P. (2000). Qualitative Content Analysis, working paper, no. 1/2.

Mayring, P. (2015). Qualitative Inhaltsanalyse, in Flick, U., Kardorff, E. & Steinke, I. (eds.), *Qualitative Forschung. Ein Handbuch,* Reinbek bei Hamburg: Rowohlt, pp. 468-474.

Meier Kruker, V. & Rauh, J. (2005). *Arbeitsmethoden der Humangeographie,* Darmstadt: WBG Wissenschaftliche Buchgesellschaft.

Miörner, J., Zukauskaite, E., Trippl, M. & Moodysson, J. (2017). Creating institutional preconditions for knowledge flows in cross-border regions. *Politics and Space* [e-journal], vol. 0, no. 0, Available online: http://journals.sagepub.com/doi/10.1177/2399654417704664 [Accessed 11.05.2017].

Morgan, D. L. (2007). Paradigms Lost and Pragmatism Regained. *Journal of Mixed Methods Research* [e-journal], vol. 1, vol. 1, Available online: http://journals.sagepub.com/doi/abs/10.1177/2345678906292462 [Accessed 20.03.2017].

Muller, E., Zenker, A., Hufnagl, M., Héraud, J.-A., Schnabl, E., Makkonen, T. & Kroll, H. (2017). Smart specialisation strategies and cross-border integration of regional innovation systems: policy dynamics and challenges for the Upper Rhine. *Environment and Planning C: Politics and Space* [e-journal], vol. 0, no. 0, Available online: http://journals.sagepub.com/doi/abs/10.1177/0263774X16688472 [Accessed 16.05.2017].

Nauwelaers, C., Boekholt, P., Mostert, B., Cunningham, P., Guy, K., Hofer, R. & Rammer, C. (2009). Policy Mixes for R&D in Europe, working paper, no., UNU-MERIT.

Perkmann, M. (2003). Cross-Border Regions in Europe. *European Urban and Regional Studies* [e-journal], vol. 10, no. 2, Available online: http://journals.sagepub.com/doi/abs/10.1177/0969776403010002004 [Accessed 27.02.2017].

Region, I. N. S. (2017a). Northern Connections, [Interreg North Sea Region, Available online: http://northsearegion.eu/northern-connections/about/ [Accessed 21.04.2017].

Region, I. N. S. (2017b). Northern Connections [pdf], Available online: http://northsearegion.eu/northern-connections/about/ [Accessed].

Rogge, K. S. & Reichardt, K. (2013). Towards a more comprehensive policy mix conceptualization for environmental technological change: A literature synthesis, working paper, no. No. S3/2013, Fraunhofer Institute for Systems and Innovation Research ISI.

Rogge, K. S. & Reichardt, K. (2016). Policy mixes for sustainability transitions: An extended concept and framework for analysis. *Research Policy* [e-journal], vol. 45, no. 8, Available online: http://www.sciencedirect.com/science/article/pii/S0048733316300506 [Accessed 11.01.2017].

Schleswig-Holstein. (2014). Regionale Innovationsstrategie Schleswig-Holstein [pdf], Available online: https://www.schleswig-holstein.de/DE/Fachinhalte/F/foerderprogramme/MWAVT/Downloads/regionale_innovationsstrategieNEU.pdf;jsessionid=20894DFCF8659AAD4C6261037A2DDA03?__blob=publicationFile&v=3 [Accessed 23.03.2017].

Schleswig-Holstein. (2015a). Grundlagenpapier zur Clusterpolitik, Clusterstrategie und Clusterförderung des Landes Schleswig-Holstein [pdf], Available online: https://www.schleswig-

holstein.de/DE/Fachinhalte/C/cluster/Downloads/grundlagenpapierClusterstrategie.pdf?__blob=publicationFile&v=3 [Accessed 11.04.2017].

Schleswig-Holstein. (2015b). Rahmenplan Deutsch-Dänische Zusammenarbeit des Landes [pdf], Available online: https://www.schleswig-holstein.de/DE/Fachinhalte/D/daenemark_zusammenarbeit/Downloads/Rahmenplan_Deutsch.pdf?__blob=publicationFile&v=6 [Accessed 25.03.2017].

Schleswig-Holstein. (2017). Landesentwicklungsstrategie Schleswig-Holstein 2030 [pdf], Available online: http://www.schleswig-holstein.de/DE/Schwerpunkte/Landesentwicklungsstrategie/Downloads/downloads/landesentwicklungsstrategie.pdf?__blob=publicationFile&v=6 [Accessed 23.03.2017].

Sønderjylland-Schleswig, R. (2017a). Vereinbarung zur deutsch-dänischen Zusammenarbeit in der Region Sønderjylland–Schleswig [pdf], Available online: http://www.region.de/region/de/ueber_uns/region/vereinbarung.php [Accessed 23.03.2017].

Sønderjylland-Schleswig. (2017b). Vereinbarung zur deutsch-dänischen Zusammenarbeit in der Region Sønderjylland–Schleswig, Region Sønderjylland-Schleswig, Available online: http://www.region.de/region/de/ueber_uns/region/vereinbarung.php [Accessed 13.03.2017].

Syddanmark, R. (2015). Det gode liv som vækstskaber [pdf], Available online: http://detgodeliv.regionsyddanmark.dk/vaekst-og-udviklingsstrategi/ [Accessed 22.01.2017].

Syddenmark, R. & Schleswig-Holstein. (2017a). Årsplan 2017/2018 for samarbejdet mellem Region Syddanmark og delstaten Slesvig-Holsten [pdf], Available online: https://regionsyddanmark.dk/wm280460 [Accessed 29.03.2017].

Syddenmark, R. & Schleswig-Holstein. (2017b). En stærkere grænseregion - katalog med resultater fra 10 års dansk-tysk samarbejde mellem Region Syddanmark og Slevig-Holsten 2007-2017 [pdf], Available online: https://regionsyddanmark.dk/wm280460 [Accessed 29.03.2017].

Syddenmark, R. & Schleswig-Holstein. (2017c). Fælles erklæring om fortsat regionalt samarbejde mellem delstaten Slesvig-Holsten og Region Syddanmark [pdf], Available online: https://regionsyddanmark.dk/wm280460 [Accessed 29.03.2017].

Trippl, M. (2010). Developing Cross-Border Regional Innovation Systems: Key Factors and Challenges. *Tijdschrift voor Economische en Sociale Geografie* [e-journal], vol. 101, no. 2, Available online: through LUSEM University Library website http://www.lusem.lu.se/library [Accessed 03.11.2016].

Van den Broek, J. & Smulders, H. (2014). Institutional gaps in cross-border regional innovations systems: The horticultural industry in Venlo-Lower Rhine, in Rutten, R.,

Benneworth, P., Irawati, D. & Boekma, F. (eds.), *The social dynamics of innovation networks,* Abingdon: Routledge, pp. 157-176.

Van den Broek, J. & Smulders, H. (2015). Institutional hindrances in cross-border regional innovation systems. *Regional Studies, Regional Science* [e-journal], vol. 2, Available online: http://www.tandfonline.com/doi/full/10.1080/21681376.2015.1007158 [Accessed 03.11.2016].

Vasilachis de Gialdino, I. (2009). Ontological and Epistemological Foundations of Qualitative Research, working paper, no. vol. 10.

watt_2.0. (n.d.). Mehr Energie - mehr Zukunft. Available online: http://www.wattzweipunktnull.de/fileadmin/content/pdf/interne_Dok_2014/watt_2_0_broschuere_140902web_opti.pdf.

Weber, K. M. & Rohracher, H. (2012). Legitimizing research, technology and innovation policies for transformative change: Combining insights from innovation systems and multi-level perspective in a comprehensive 'failures' framework. *Research Policy* [e-journal], vol. 41, no. 6, Available online: http://www.sciencedirect.com/science/article/pii/S0048733312000613 [Accessed 15.12.2016].

windcomm. (n.d.). windcomm Schleswig-Holstein [pdf], Available online: http://www.windcomm.de/Downloads/windcomm_verein/windcommschleswig-holsteine.V.-VorstellungVertriebsmappekomplett_Internet.pdf?m=1482317612 [Accessed 12.04.2017].

WTSH. (2016). Shaping the future together. Our cluster policy [pdf], Available online: https://www.schleswig-holstein.de/DE/Fachinhalte/C/cluster/Downloads/wtsh_clusterbroschuere2016_engl.pdf?__blob=publicationFile&v=3 [Accessed 11.04.2017].

WTSH. (nd). Wir bereiten den Weg für Ihren Erfolg in Schleswig-Holstein. Available online: https://wtsh.de/wp-content/uploads/2015/05/Flyer-WTSH-Dienstleistungen.pdf [Accessed 12.04.2017].

REG X- Det Danske Klyngeakademi. (2015a). Økosystemet i Lean Energy-klyngen i region Syddanmark REG X- Det Danske Klyngeakademi, Available online: https://vaekstforum.regionsyddanmark.dk/wm454971 [Accessed 29.01.2017].

REG X- Det Danske Klyngeakademi. (2015b). Økosystemet i offshore klyngen i Region Syddanmark, REG X- Det Danske Klyngeakademi, Available online: https://vaekstforum.regionsyddanmark.dk/dwn451530 [Accessed 29.01.2017].

Yin, R. K. (1994). *Case study research: design and methods,* Los Angeles: Sage Publications, Inc.

Appendix A – Document Analysis

Strategies

No.	Strategy	dimensions geography	governance level implementation	time (duration)	source
1	Collaboration agreement of region SJSW	Region SJSW	Cross-border	2009-?	(Sønderjylland-Schleswig, 2017b)
2	Growth and development strategy RSD	RSD	regional	2016-2019	(Syddanmark, 2015)
3	Development strategy SH 2030	SH	regional	2017-2030	(Schleswig-Holstein, 2017)
4	Regional Innovation Strategy (RIS3) SH	SH	regional	2014-2020	(Schleswig-Holstein, 2014)
5	Plan for German-Danish collaboration of the region SH	SH	regional	2014-?	(Schleswig-Holstein, 2015b)
6	Joint minister declaration on the development of the German-Danish borderlands	DK-SH	Cross-border	2015-?	(Engelbrecht and Albig, 2015)
7	Danish export strategy for the energy related industries	DK	national	2017-2030	(Ervhervsministeriet et al., 2017)
8	Joint declaration on continued regional collaboration between RSD and SH	RSD-SH	regional (both)	2017-? (renewed from 2007)	(Syddenmark and Schleswig-Holstein, 2017c)
9	Year-plan for regional collaboration between RSD and SH	RSD-SH	regional (both)	2017/2018	(Syddenmark and Schleswig-Holstein, 2017a)
10	Results of 10 years regional collaboration between RSD and SH	RSD-SH	regional (both)	2007-2017	(Syddenmark and Schleswig-Holstein, 2017b)
11	Cooperation programme INTERREG 5a Germany-Denmark	INTERREG 5a GER-DK area	regional (both)	2014-2020	(5a, 2014)

Strategy documents were selected for analysis, if parts of them were primarily referring to
Cleantech policies (X.1) *or* *Cross-border policies (X.2)*
and their geographical focus was including the case study region
(X) = page number

1) Region Sønderjylland-Schleswig – Vereinbarung zur Deutsch-Dänischen Zusammenarbeit **1.2 Cross-border objectives**	**Cross-border objectives** - No mentioning of Cleantech or Cluster development, very fuzzy - Support development in CBR, create "closer connections" between population, economy and associations on both sides of the border - Improve living conditions and gender equality - Improve cooperation across the border in generell - Support public and local authority cooperations (?) - Support knowledge and technological exchange across the border (?) (also Cleantech? How?)

2)
Region Syddanmark – Det gode liv
(Region Syddanmark, 2015)
 	
2.1 Cleantech objectives
	Cleantech objectives
	- Energy efficiency = businesses that work with technology, knowledge or components that lead to intelligent and efficient exploitation of energy within all types of energy
	  - **Objective energy efficiency, industrial policy:** (21)
	  ▪ 20% growth in turnover for businesses in the field, until 2020
	  ▪ 5% increase in exports from SMEs in the field, until 2020
	- Offshore = businesses that work with technology, knowledge or components for applications in the whole value chain for offshore energy production, both renewable and fossil fuel(!)
	  - **Objective offshore, industrial policy:** (21)
	  ▪ 15 % growth in turnover for businesses in the field, until 2020
	  ▪ 15 % increase in exports from businesses in the field, until 2020
	  - **Indirect objective, energy policy:** (34)
	  ▪ Reduction of CO2 emissions in Southern Denmark of 40% by 2020 compared to 1990

2)
Region Syddanmark – Det gode liv
(Region Syddanmark, 2015)
 	
2.2 Cross-border objectives
	Cross-border objectives
	- Cross-border cooperation is "central" for the strategy, as Germany is Denmark's biggest trade partner (43)
	- Region Sønderjylland-Schleswig: Aabenraa and Sønderjylland kommune have cityregional cooperations with Flensburg.
	- **Objective cross-border policy:**
	  - Cross-border cooperation shall be increased both in the eastern and western (north-sea) part, visibility shall be improved
	  - Improvements in joint development of tourism, businesses and infrastructure
	  - Political, administrative and cultural barriers shall be overcome
	  - The cross-border cooperation shall contribute clearly to the growth stratgy's goals (also for cleantech, see above)

3) Schleswig-Holstein Landesentwicklungsstratgie Schleswig-Holstein 2030 (Schleswig-Holstein, 2017) **3.1 Cleantech objectives**	**Cleantech objectives** - Support strong fields: power electronics, wind power, biomass (energy efficiency) - Get established as a renewable energy exporting region, exploit growth potential in green technologies and reduce CO2 - Develop the Cluster for renewable energies further (138) - **Indirect objective energy policy** - Reduction of CO2 emissions in Schleswig-Holstein of 40% compared to 1990 until 2020 and of 85-95% until 2050 (139)
3) Schleswig-Holstein Landesentwicklungsstratgie Schleswig-Holstein 2030 (Schleswig-Holstein, 2017) **3.2 Cross-border objectives**	**Cross-border objectives** - Schleswig-Holstein & Denmark leaders in cross-border cooperation? (180) - Judtland-route is an important development axis, Sønderjylland-Schleswig takes in an important "hinge function" (180) - Three axis concept for future cooperations with Metropolregion Hamburg, Region Syddenmark, Jutland corridor and STING corridor (joint plan to be published) Further policy strategies: - "*Rahmenplan Deutsch-Dänische Zussammenarbeit des Landes*" strategic goals for economic integration on the Jutland corridor - "*Gemeinsame Ministererklärung zu Wachstum und Wirtschaftsentwicklung im deutsch-dänischen Grenzland*" - Partnership agreement with region Syddenmark - INTERREG Deutschland – Dänemark with local municipalities implementing on the German side
4) Schleswig-Holstein	**Cleantech objectives**

Regionale Innovationsstrategie Schleswig-Holstein (Schleswig-Holstein, 2014)
 	
4.1 Cleantech objectives
	- Strategic objective 7: Increase in R&D within renewable energy, energy- and resource efficiency, and bio-economy (130-138)
	- Imbedded in
	  - National Energiewende law (2011)
	  - Reduction of CO2 emissions of 40% compared to 1990 until 2020, share of renewables in final energy consumption shall rise to 18% (in 2020) and 60% (in 2060)
	  - Reductions of primary and final energy demand
	  - National bioeconomoy research strategy
	- Instrument approach (134)
	- R&D in SH need to be coordinated with Danish R&D activities (cross-border connection)!

4)
Schleswig-Holstein Regionale Innovationsstrategie Schleswig-Holstein (Schleswig-Holstein, 2014)
 	
4.2 Cross-border objectives
	Cross-border objectives
	- Strategic objective 9: building innovation capacities in Schleswig-Holstein through intelligent connections of cross-border potentials (144-150)
	  - Education, science and innovation policies need to be developed in a cross-border manner towards north and east (144)
	  - Systematic coordination of innovation policies on both sides of the border (146)
	  - Support of cross-border cooperation with southern Denmark in renewables and power electronics (energy efficiency) – **among others** through Furgy!

5)
Rahmenplan Deutsch-Dänische Zusammenarbeit des Landes (Schleswig-Holstein, 2015b)
 	
5.1 Cleantech objectives
	Cleantech-objectives
	- Cleantech industries is one of the industry fields that shall be supported through cross-border cluster development: (8)
	  - Cluster shall be set up in a cross-border manner in the INTERREG V A program region 2014-2020
	  - Starting with: Energy Cluster (Furgy) & Offshore Wind & Water Cluster
	  ▪ Furgy shall cooperate with existing institutions and clusters in the field of renewables and energy efficiency
	  ▪ One perspective could be cross-border start-ups with international outlook (8)

5) Rahmenplan Deutsch-Dänische Zusammenarbeit des Landes (Schleswig-Holstein, 2015b)	**Cross-border objectives** - Create the basis for growth, innovation, investments and labour together (7) - Stronger connections between people and companies - Better infrastructures - Improve quality of education and research

5.2 Cross-border objectives	- Support the further "integration" of the border regions Strategic instrument strategies: (7) - Set up clusters across the border - Build and coordinate infrastructure development, education and research, knowledge and technology transfer, cultural exchange

6)
Gemeinsame Ministererklärung zu Wachstum und Wirtschaftsentwicklung im deutsch-dänischen Grenzland (Engelbrecht and Albig, 2015)
 	
6.2 Cross-border objectives
	Cross-border objectives
	- No mentioning of Cleantech or Cluster development, only INTERREG is named once.
	- Cooperation targeted and highlighted in:
	  - Cooperation employment and tax field
	  - Education
	  - Infrastructures and traffic

7)
Strategi for energiområdet (Ervhervsministeriet et al., 2017)
 	
7.2 Cross-border objectives
	Cross-border objectives
	- Strategy for new export directive for Germany, UK and USA 2017-2019 (14)
	  - Establish cooperations with German authorities to spread knowledge and advertise Danish regulatory and energy-technology related solutions
	  - Improve Danish companies access to German policy-makers and knowledge of planned policies and investment in Germany
	  ▪ Cooperation of Danish and German public organisations in fields where Danisch companies are strong (energy efficiency)
	  ▪ Implementation mainly through embassies on the national level

8) Fælles erklæring om fortsat regionalt samarbejde mellem delstaten Slesvig-Holsten og Region Syddanmark	**Cross-border objectives** - close cross-border cooperation that both regions can gain from in cooperation forums Jutland-corridor, region Sønderjylland-Schleswig and the available INTERREG instrumens 'Germany-Denmark', 'Baltic Sea region' and 'North Sea region' (n.p.) - strenghen cross-order clusters to increase cross-border cooperation and innovation & technology transfer

(Syddenmark and Schleswig-Holstein, 2017c) **8.2 Cross-border objectives**	- among other fields, within - energy & energy technologies, sustainable development
9) Årsplan 2017/2018 for samarbejdet mellem Region Syddanmark og delstaten Slesvig-Holsten (Syddenmark and Schleswig-Holstein, 2017a) **9.1 Cleantech objectives**	**Cleantech objectives** - cross-border cluster development (4) - in renewable energy field (Furgy) - Support in finding qualified employees - in power electronics (NEW) - establishment of a cross-border centre for research, innovation and education in the field of power electronics - cross-border economic cooperation in a wider geographic context (Jutland corridor) (5) - economic cooperation with energy clusters in the whole project region (North Sea region, Northern Connections: Strategic Transnational Cluster Cooperation – Unlocking the potential for regional innovation project)
9) Årsplan 2017/2018 for samarbejdet mellem Region Syddanmark og delstaten Slesvig-Holsten (Syddenmark and Schleswig-Holstein, 2017a) **9.2 Cross-border objectives**	**Cross-border objectives** - INTERREG 5A (Germany-Denmark) shall be used strategically (3) also in the Cleantech field! - Collaboration in the design of plans on the regional level (Landesebene in SH)! - Jutland-corridor plans shall also include Hamburg and further parts of Jutland - Overcome barriers for cross-border cooperation - Continuous work in cross-border partnerships (Sønderjylland-Schleswig e.g.) - redesign and coordination of instruments in strong fields is done continuously through political and administrative actors
10) En stærkere grænseregion - katalog med resultater fra 10 års dansk-tysk samarbejde mellem Region Syddanmark og Slevig-Holsten 2007-2017 (Syddenmark and Schleswig-Holstein, 2017b)	**Cleantech objectives** - Overview of current cross-border cleantech instruments (8) - Furgy Clean Innovation (2014-2019, INTERREG Deutschland-Dänemark) - PE:Region (2014-2019, INTERREG Deutschland-Dänemark) - Northern Connections: Strategic Transnational Cluster Cooperation – Unlocking the potential for regional innovation (2016-2020, INTERREG North Sea)

10.1 cleantech objectives	

11)
Kooperationsprogramm unter dem Ziel „Europäische territoriale Zusammenarbeit“ INTERREG Deutschland-Danmark
(Interreg 5a 5a, 2014)
 	
11.1 cleantech objectives
	Cleantech-objectives
	are embedded in
	- priority 1 axis objectives: Innovation (21)
	  - As cleantech has been chosen as a field of strength that needs to be supported to increase product, process and social innovations
	- priority 2 axis objectives: sustainable development (26)
	  - increase of sustainable usage of ressources and energy by all companies in the program area (indirectly favouring cleantech industries)
	- priority 3 axis objectives: employment and education (34)
	  - increase in mobility of employees and students across-the border (focus Cleantech aswell indirectly)

Instruments

Instruments were selected for analysis, if their geographical focus was including the case study region, either as a primary cross-border cleantech instrument or as a regional cleantech cluster instrument in Schleswig-Holstein or Region Syddanmark

No.	primary cross-border cleantech Instrument	dimensions geography	governance level implementation	time (duration)	source
1	FURGY Clean Innovation (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	2015-2019	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)
2	RELIABLES Offshore (INTERREG 5A)	INTERREG 5A program region (mainly Westcoast)	cross-border/ regional	2016-2019	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)
3	SPICE (INTERREG 5A)	INTERREG 5A program region	Cross-border/regional	2015-2018	(Interreg 5a, 2017)
4	RollFlex (INTERREG 5A)	INTERREG 5A program region	Cross-border/regional	2016-2019	(Interreg 5a, 2017)
5	PE:Region (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	2016-2019	(Interreg 5a, 2017)
6	LBL2 (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	2016-2019	(Interreg 5a, 2017)
7	carpeDIEM (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	2016-2019	(Interreg 5a, 2017)
16	Northern Connections (INTERREG North Sea Region)	INTERREG North Sea	Cross-border national	2016-2020	(Region, 2017a)

No.	primary regional cleantech cluster Instrument	dimensions geography	governance level implementation	time (duration)	source

8	CLEAN	Denmark	National, regional	Since 2014 - ongoing	(REG X, 2015a)
9	Offshoreenergy.dk	Denmark	National, regional	ongoing	(REG X, 2015b)
10	EE.SH Netzwerkagentur Erneuerbare Energien Schleswig-Holstein	Schleswig-Holstein	regional	ongoing	(Schleswig-Holstein, 2015a; WTSH, 2016)
11	EEK.SH Competence Centre for Renewable Energies and Climate Change	Schleswig-Holstein	regional	2015 - 2018	(EEK.SH, 2017; WTSH, 2016)
12	windcomm Schleswig-holstein e.V.	Schleswig-Holstein	regional	ongoing	(Schleswig-Holstein, 2015a; windcomm, n.d.),
13	watt_2.0	Schleswig-Holstein	regional	Since 2011-ongoing	(Schleswig-Holstein, 2015a; watt_2.0, n.d.)
14	WTSH	Schleswig-Holstein	regional	ongoing	(WTSH, 2016; WTSH, nd)
15	ARGE Netz	Germany, focus on Schleswig-Holstein	National, regional	ongoing	(ARGE NETZ, 2016; Schleswig-Holstein, 2015a)

Instruments – cross border targeting cleantech industries

		dimensions				**descriptive design features**			
No.	**Instrument (program)**	**geography**	**governance level implementation**	**primary type**	**primary purpose**	**legal form**	**targeted actors**	**duration of its validity**	**Source**
1	FURGY Clean Innovation (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	systemic	information (cluster)	project	triple helix actors (energy efficiency)	2015-2019	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)

2	RELIABLES Offshore (INTERREG 5A)	INTERREG 5A program region (mainly Westcoast)	cross-border/ regional	systemic	information (cluster)	project	Triple helix actors (offshore energy)	2016-2019	(Interreg 5a, 2017; Schleswig-Holstein, 2015b)
3	SPICE (INTERREG 5A)	INTERREG 5A program region	Cross-border/regional	systemic	Information (innovation lab & education)	project	University students & companies (partly cleantech)	2015-2018	(Interreg 5a, 2017)
4	RollFlex (INTERREG 5A)	INTERREG 5A program region	Cross-border/regional	systemic	Information (cluster)	project	R&D actors (solar energy efficiency)	2016-2019	(Interreg 5a, 2017)
5	PE:Region (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	systemic	information (cluster)	project	triple helix actors (power electronics)	2016-2019	(Interreg 5a, 2017)
6	LBL2 (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	systemic	information (cluster)	project	Triple helix actors (biogas)	2016-2019	(Interreg 5a, 2017)
7	carpeDIEM (INTERREG 5A)	INTERREG 5A program region	cross-border/ regional	systemic	Information (cluster and education)	project	Triple helix actors (energy management in buildings)	2016-2019	(Interreg 5a, 2017)

16	Northern Connections (INTERREG North Sea Region)	INTERREG North Sea	Cross-border national	systemic	information (transnational cluster)	project	clusters, cities, regions	2016-2020	(Region, 2017a)

Instruments –cleantech industry cluster in Schleswig Holstein or Region Syddanmark (regional, not primarily cross-border)

		dimensions				**descriptive design features**			
No.	**Instrument (program)**	**geography**	**governance level implementation**	**primary type**	**primary purpose**	**legal form**	**targeted actors**	**duration of its validity**	**Source**
8	CLEAN	Denmark	National, regional	systemic	Information (cluster)	Private-public partnership	triple helix actors (cleantech)	Since 2014 - ongoing	(REG X, 2015a)
9	Offshoreenergy.dk	Denmark	National, regional	systemic	Information (cluster)	Private-public partnership	triple helix actors (offshore)	ongoing	(REG X, 2015b)
10	EE.SH Netzwerkagentur Erneuerbare Energien Schleswig-Holstein	Schleswig-Holstein	regional	systemic	Information (cluster)	Public organisation	Triple helix actors (cleantech)	ongoing	(Schleswig-Holstein, 2015a; WTSH, 2016)
11	EEK.SH Competence Centre for Renewable	Schleswig-Holstein	regional	systemic	Information (cluster) among others	Public organisation, project funded	Triple helix actors (cleantech)	2015 - 2018	(EEK.SH, 2017; WTSH, 2016)

	Energies and Climate Change								
12	windcomm Schleswig-holstein e.V.	Schleswig-Holstein	regional	systemic	Information (cluster)	Publicly funded association	Triple helix actors (wind energy)	ongoing	(Schleswig-Holstein, 2015a; windcomm, n.d.),
13	watt_2.0	Schleswig-Holstein	regional	systemic	Information (cluster)	Privately fundet association	Companies (renewable energies)	Since 2011-ongoing	(Schleswig-Holstein, 2015a; watt_2.0, n.d.)
14	WTSH	Schleswig-Holstein	regional	systemic among others	Information (cluster) among others	Public organisation	Triple helix actors (cleantech, among others)	ongoing	(WTSH, 2016; WTSH, nd)
15	ARGE Netz	Germany, focus on Schleswig-Holstein	National, regional	systemic, among others	Information (cluster) among others	limited partnership with a limited liability company	Partner firms	ongoing	(ARGE NETZ, 2016; Schleswig-Holstein, 2015a)

Appendix B – Case study: interview guidances

The language of all interviews and interview guidances is in Danish or German

Interview guide til
Interview I, Christian Boysen, CLEAN
27.03.2017, Sundmarksvej 27, 6400 Sønderborg

Spørgsmål:

I) Konsistensen af instrumenterne:

1) Hvor godt synes du er Furgy som grænseoverskridende netværk (og grænseoverskridende tiltagsinstrument) blevet integreret i de regional innovationsstrategier i Syddanmark og Schleswig-Holstein? (konsistens Furgy instrumentet med strategierne)

2) Hvor konsistent synes du passer Furgy ind i de to regionale tiltagsmønstre (instrument mix) i Schleswig-Holstein og Syddanmark? Findes der nogle målkonflikter med forskellige specialiseringer indenfor cleantech eller også andre industrier? (konsistens Furgy instrumentet?) (gør et land mere og et andet land gør mindre?)

3) Hvordan forholder det sig i forhold til andre grænseoverskridende instrumenter (INTERREG Baltics og Northsea, patnerskabsaftalen mellem kommunerne, STRING, Jyllandsrouten)

-

II) Kohærensen af processerne :

1) Synes du at ***udviklingen/udkastene til nye tiltag/programmer*** kunne blive bedre koordineret sådan at der synergierne mellem national/regionale tiltag og Furgy bliver udnyttet effektivt (hvor kohærent er processerne?)

i. På den danske side, på den tyske side
ii. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går fra dit synsvinkel?

2) Hvordan ser det ud sig i forhold til koordination med Furgy på ***implementerings niveauet*** (f.eks. EE.SH, IHK, WTSH, IB.SH, region Syddanmark, vækstforum syd, project ZERO)

i. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går? (hvor kohærent er processerne?)

3) Har I en form for koordination med de **andre grænseoverskridende instrumenter**? Har I brug for sådan noget?

i. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går? (hvor kohærent er processerne?)

-

III) Målrettethed of bæredygtighed af de grænseoverskridende tiltagsstrukturer

1) Hvor målrettet og langt syende synes du de aktuelle bestræbelser af Schleswig-Holstein og Region Syddenmark er at fremme den grænseoverskridende samarbejde og integrere deres tiltagsstrukturer indenfor Cleantech?
    i. Jyllandskorridoren? Der skriver SH i samarbejdets strategien med Danmark at Sønderjylland-Schleswig kan have en "Scharnierfunktion"/"hængsels funktion" Hvad med Furgy? Skal/kan regionale/nationale strukturer tilpasses mere?
2) Hvis vi ikke havde INTERREG programmet eller prioriteterne af de europæiske fonde ville forandres, ville samarbejdet inden for Cleantech består videre?

-

IV) *Omfang af grænseoverskridende policy strukturer:*
1) Synes du at det ville på langt sigt være bedre at intensivere tiltagsstrukturens integration på tværs af grænserne?
2) Hvor effektiv er strukturerne lige nu med hensyn til effektivitet af Furgy CLEAN? Hvordan kunne det ud fra din synsvinkel forbedres?

Interview Leitfaden für
Interview II, Björn Meyer, IHK Schleswig-Holstein, Jan Cornils, WTSH

Heinrichstr. 28-34 , 24937 Flensburg
03.04.2017

Fragen

V) *Konsistenz der Instrumente:*
1) Wie gut denken Sie, ist Furgy Clean Innovation als grenzüberschreitendes Instrument in die regionalen Innovationsstrategien in Süddänemark und Schleswig-Holstein integriert?
    i. Im jüngst erschienen Zusammenarbeitsabkommen steht erstmals, dass man konkret die Leistungselektronik strategisch fördern will (cross-border)
2) Sehen Sie positive oder negative Interaktionen zwischen Furgy und anderen regionalen (also SH/Syddanmark) Instrumenten? Alles in allem wie gut passt sich Furgy in den Instrument mix in Schleswig-Holstein ein (hier gibt es ja bereits viele Netzwerkorganisationen, die aber nicht an Furgy teilnehmen: Zielkonflikte)?
3) Als Leadpartner in diesem INTERREGprojekt: Gibt es positive oder negative Interaktionen mit anderen grenzüberschreitenden Instrumenten (INTERREG Baltic Sea und North Sea, Patnerschaftsabkommen, STRING, Jyllandskorridor)
    -

VI) *Kohärenz der Prozesse* :
1) Denken Sie das die Prozesse der Entwicklung/des Designs von neuen Strategien bzw. Instrumenten den regionalen/nationalen Ebene besser koordiniert werden müsste, um Furgy effektiver ausgestalten zu können
    i. (Warum läuft bereits alles gut?/Warum nicht? Müssten die deutschen Netzwerkorganisationen in Cleantech mehr zusammenarbeiten? Wie läuft es in Deutschland/Dänemark?)

ii. In welche Richtung geht die Entwicklung hier in den letzten 10 Jahren: mehr koordination/ weniger? Wohin sollte Sie gehen?

2) Wie verhält sich dies bezüglich der Koordinierung von Prozessen bei der Implementierung (f.eks. EE.SH, IHK, WTSH, IB.SH, Watt2.0, region Syddanmark, vækstforum syd, project ZERO)

i. In welche Richtung geht die Entwicklung hier in den letzten 10 Jahren: mehr koordination/ weniger? Wohin sollte Sie gehen?

3) Gibt es eine Koordination von Prozessen mit anderen grenzüberschreitenden Strategien/ Instrumenten

i. In welche Richtung geht die Entwicklung hier in den letzten 10 Jahren: mehr koordination/ weniger? Wohin sollte Sie gehen?

VII)Zielgerichtetheit und Nachhaltigkeit der grenzüberschreitenden Maßnahmen

1) Wie zielgerichtet und nachhaltig sind Ihrer Ansicht nach die aktuellen Bestrebungen (im Abkommen über die Zusammenarbeit vom 21.03 festgehalten) von Schleswig-Holstein und der Region Syddanmark die Grenzüberschreitenden Zusammenarbeit im Bereich Cleantech auszubauen?

i. Sind Maßnahmen im Rahmen des Jütlandkorridors ausreichend, um langfristig konkrete Instrumente und nachhaltige zusammenarbeit in der Cleantech Branche zu etablieren?

ii. Würden Sie zustimmen, dass es eine Cleantech-Förderung im grenzübergreifenden Kontext ohne INTERREG und EU-Mittel nicht gäbe.

iii. Auf welcher Ebene müssten die Strukturen angegangen werden, um die Förderung nachhaltiger zu gestalten?

VIII) Umfang der grenzübergreifenden Policy für die Cleantech-Industrie

1) Momentan begrenzt sich die Zusammenarbeit auf die Entwicklung von Clustern (Furgy, Offshore, Northern Connections) zum besseren Wissensaustausch, sowie Mobilitätszuschüssen und dem Infrastruturausbau, von dem auch die Cleantech Branchen profitieren

Sollte man hier in Zukunft weiter gehen und auch ökonomische Instrumente (koordinierte R&D Förderung z.B.)/ bzw. juristische Instrumente (koordinierte Standards z.B.) gemeinsam entwickeln? Wieso ja/ wieso nein? Realisti

Interview guide til
Interview III, Olav Sønderskov, Region Syddanmark
03.04.2017, Damhaven 12, 7100 Vejle

Spørgsmål:

IX) Konsistensen af instrumenterne:

1) Hvor godt synes du er grænseoverskridende instrumenter (som cluster instrumentet Furgy) blevet integreret i de regional innovationsstrategier i Syddanmark (og så vidt som du kan sige i Schleswig-Holstein?) (konsistens Furgy instrumentet med strategierne)

2) Hvor konsistent synes du passer de grænseoverskridende instrumenter ind i de to regionale tiltagsmønstre (instrument mix) i Syddanmark (i SH)? Findes der nogle målkonflikter med forskellige specialiseringer indenfor cleantech eller også andre industrier? (konsistens Furgy instrumentet?) (gør et land mere og et andet land gør mindre?)
3) Hvordan forholder det sig i forhold til andre grænseoverskridende instrumenter (INTERREG Baltics og Northsea, patnerskabsaftalen mellem kommunerne, STRING, Jyllandsrouten)

-

X) Kohærensen af processerne :

1) Synes du at ***udviklingen/udkastene til nye tiltag/programmer*** kunne blive bedre koordineret sådan at der synergierne mellem national/regionale tiltag og Furgy bliver udnyttet effektivt (hvor kohærent er processerne?)
    i. På den danske side, på den tyske side
    ii. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går fra dit synsvinkel?
2) Hvordan ser det ud sig i forhold til koordination med Furgy på ***implementerings niveauet*** (f.eks. EE.SH, IHK, WTSH, IB.SH, region Syddanmark, vækstforum syd, project ZERO)
    i. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går? (hvor kohærent er processerne?)
3) Har I en form for koordination med de **andre grænseoverskridende instrumenter**? Har I brug for sådan noget?
    i. I hvilken retning synes du udviklingen går i de sidste 10 år? I hvilken retning skulle den går? (hvor kohærent er processerne?)

-

XI) Målrettethed of bæredygtighed af de grænseoverskridende tiltagsstrukturer

1) Hvor målrettet og langt syende synes du de aktuelle bestræbelser af Schleswig-Holstein og Region Syddenmark er at fremme den grænseoverskridende samarbejde og integrere deres tiltagsstrukturer indenfor Cleantech?
    i. Jyllandskorridoren? Der skriver SH i samarbejdets strategien med Danmark at Sønderjylland-Schleswig kan have en "Scharnierfunktion"/"hængsels funktion" Hvad med Furgy? Skal/kan regionale/nationale strukturer tilpasses mere?
2) Hvis vi ikke havde INTERREG programmet eller prioriteterne af de europæiske fonde ville forandres, ville det grænseoverskridende samarbejde inden for Cleantech består videre?

-

XII)Omfang af grænseoverskridende policy strukturer:

1) Synes du at det ville på langt sigt være bedre at intensivere tiltagsstrukturens integration på tværs af grænserne?
2) Hvor effektiv er strukturerne lige nu med hensyn til effektivitet af Furgy CLEAN? Hvordan kunne det ud fra din synsvinkel forbedres?
3) Hvor realistisk er en udvidelse af samarbejdet på økonomiske (subventioner) og juridiske instrumenter (regulatorer som skatte love etc.)

Leitfragen zur schriftlichen Beantwortung
für Thomas Pfannkuch - Head of division II 50 regional policy, collaboration with Denmark, INTERREG 5A, North Sea issues, information services
Ministry of Justice, Culture, and Europe SH

Kiel, mail and telephone 14.03.2017

Damit sie meine Wortwahl besser einordnen können, zunächst ein paar Begriffsdefinitionen:

Cleantech:	Branchen mit Schwerpunkt in der Forschung, Entwicklung oder Kommerzialisierung in den Bereichen Erneuerbare Energien, Energie-/ Ressourceneffizienz und/ oder Bioökonomie (weitergefasste Definition).
Policy Elemente:	***Übergeordnete Förderstrategie***: für Cleantech. In Ihrem Fall RIS3 für SH, andere z.B. regionale Wirtschaftsstrategie ***Förderinstrumente*:** konkrete Förderinstrumente die die Entwicklung von Cleantech direkt oder indirekt profitieren können - *Ökonomische Instrumente* (Steuererleichterungen, Zuschüsse, Kredite etc.) - *Juristische Instrumente* (Patentrecht, Intellektuelles Eigentum) - *Informations- und Wissenstransfer* (Weiterbildungen, Gründungsberatung, Clusterorganisationen etc.)
Policy Prozesse:	Prozesse im Rahmen von entweder/oder… - ***Entwurf/Design*** (politische Entscheidungsfindung, Verhandlungen unter Entscheidungsträgern) - ***Implementierung*** (Prozesse in der praktischen Umsetzung von Instrumenten) …der Förderelemente

Fragen :

XIII) Konsistenz der Policy Elemente:

1) In dem jüngst veröffentlichten Jahresplan 2017/2018 zur Deutsch-Dänischen Zusammenarbeit heißt es unter anderem, dass die „Überwindung der noch bestehenden Barrieren, die die grenzüberschreitende Zusammenarbeit (…) über die Grenze hinweg erschweren“ (S.3) angestrebt wird. Sind vor diesem Hintergrund die Strategien und Instrumente, zur Förderung von Cleantech in der Region Syddanmark (bzw. in Dänemark) mit den entsprechenden Strategien und Instrumenten in Schleswig-Holstein hinreichend abgestimmt?

2) Worin liegen Ihrer Meinung nach die größten Schwierigkeiten bei konkret grenzüberschreitend ausgerichteten Fördermaßnahmen (spielen z.B. unterschiedliche Rechtssysteme, Zielkonflikte in Strategien und Instrumenten, kulturelle Barrieren etc?)?

-

XIV) Kohärenz der Policy-Prozesse:

3) Werden aus Ihrer Sicht Prozesse im Rahmen des **Designs/des Entwurfes** von neuen Strategien oder Instrumenten zur Förderung von Cleantech auf Landesebene und grenzübergreifend hinreichend koordiniert?
    i. Hat sich dies in den vergangenen 10 Jahren grenzübergreifender Zusammenarbeit verändert und falls ja, inwiefern?
4) Wie verhält sich diese Koordination auf der Ebene der **Implementierung** von Maßnahmen durch verschiedene Träger auf Landesebene (z.B. EE.SH, IHK, WTSH, IB.SH, watt2.0) mit grenzüberschreitenden Maßnahmen (z.B. Furgy Clean Innovation, Northern connections)?
    i. Hat sich dies in den vergangenen 10 Jahren grenzübergreifender Zusammenarbeit verändert und falls ja, inwiefern?

-

XV)Nachhaltigkeit der grenzüberschreitenden Förderstrategie:

5) Für wie nachhaltig halten Sie die aktuellen Bestrebungen des Landes SH in die grenzüberschreitende Zusammenarbeit im Rahmen der Förderung von Cleantech?
    a. Würde dies auch ohne das INTERREG-Programm/ eine projektbezogene EU-Förderung bestand haben? Wie sehen die grenzüberschreitende Zusammenarbeit in diesem Bereich in Zukunft? (Pläne über einen Jüdtlandskorridor etc.)

-

XVI) Umfang & Volumen der grenzüberschreitenden Förderstrategie:

6) Denken Sie es wäre langfristig sinnvoll weiter zu gehen als bisher?
    a. Ist zukünftig mehr Abstimmung der Förderstrukturen vorgesehen, z.B. um eine integriertere Grenzregion Sønderjylland-Schleswig zu erreichen und vorhande Synergiepotenitale dort weiter auszubauen?
    b. Wird man im Bereich der Cleantech Förderung über die bisherige Zusammenarbeit (grenzübergreifende Cluster und Mobilitätsförderung) inhaltlich hinausgehen?

Appendix C – Case study: analysis

Interview quotes, notes and paraphrases used for the in the analysis presented in chapter 4.2.

This appendix presents quotes and content from notes selected from the 3 interviews and the single email questionnaire conducted for this paper. The quotes were used for the analysis presented in Section 4.
Abbreviations:
SH = Schleswig-Holstein
RSD = Region Syddanmark
SJSW= Sønderjylland-Schleswig
FCI = Furgy Clean Innovation

Table 1. Interview person labels.

Interview	Interviewee	Position	Organisation	Place and time
I	Christian Boysen	Project Manager FCI	CLEAN	Sønderborg (DK), 27.03.2017
II	Björn Meyer	Project Manager FCI	IHK SH	Flensburg (GER), 03.04.2017
II	Jan Cornils	Project Manager FCI & PE:REGION	Business Development and Technology Transfer Cooperation SH (WTSH)	Flensburg (GER), 03.04.2017
III	Olav Sønderskov	Regional Economic Policy and ”ydeområder” manager	RSD	Vejle (DK), 03.04.2017

Field conversation and mail exchange	Respondent	Position	Organisation	Place and time of response
IV	Thomas Pfannkuch	Head of division II 50 regional policy, collaboration with Denmark, INTERREG 5A, North Sea issues, information services	Ministry of Justice, Culture, and Europe SH	Kiel (GER) (telephone and mail) 14.03.2017

Table 2. Code-plan

1. Consistency of cross-border policy elements			
Sub-categories	Definition	Coding rule	Example of analytical unit
1.1 Second level consistency	Alignment of policy objectives on the strategy level	Units referring to strategies relevant to the case study, and/or their alignment, coordination	*See examples below*
1.2 Second level consistency	Degree to which instruments in the instrument mix reinforce or undermine each other	Units referring to interactions between instruments relevant to the case study	
1.3 Third level consistency	Interplay of strategies and the instrument mixes	Units referring to the consistency of strategies and instruments relevant to the case study overall	
2. Coherence of cross-border policy processes			
Sub-categories	Definition	Coding rule	Example of analytical unit
2.1 Coherence in policy making	Integration or coordination of cross-border political problem solving processes	Units referring to the integration or coordination policy-making processes relevant to the case study	*See examples below*

	in policy-making, -learning, -monitoring, or -evaluation		
2.2 Coherence in policy implementation	Integration or coordination of arrangements made by actors executing and enforcing the elements of the cross-border policy mix	Units referring to the integration or coordination of policy-implementation processes relevant to the case study	
2.3 Coherences in policy style	Integration or coordination of operating procedures of a certain authority or group of actors influencing the cross-border policy mix	Units referring to the integration or coordination of policy style coherences relevant to the case study	
3. Cross-border policy credibility			
Sub-categories	Definition	Coding rule	Example of analytical unit
3.1 Reliability of the cross-border policy elements and processes	Extent to which the cross-border policy mix is believable and reliable overall (regarding funding) and regarding its elements and processes	Units referring to perceptions of actors interviewed relating to their trust and believe in the current cross-border policy mix	*See examples below*
4. Cross-border policy comprehensiveness:			
Sub-categories	Definition	Coding rule	Example of analytical unit
4.1 Comprehensiveness of cross-border elements	Degree to which policy elements responds to all	Units referring to the types of cross-border instruments and strategies used and their ability to address market,	*See examples below*

	types of failures in the cross-border area	system, and transformational failures (depth)	
4.2 Comprehensiveness of cross-border processes	Degree to which policy processes work towards higher comprehensiveness of elements	Units referring to past and future policy-making, implementation and operating procedures that point towards the future development of the comprehensiveness	

Table 3. Quotes related to main aspects of the analysis, structured after categories and sub-categories (green = reference in text)

1 Consistency of cross-border policy elements: quotes and analytical units		**Paraphrases**
1.1.1 First level consistency	• Så vil jeg sige på SH niveau, det er lidt hede over branche niveauet. For det tror jeg, er ikke kun gældende indenfor energi-branchen de har dernede, men lige så meget for wellfare og hvad de ellers har af strategiområder derned. **(I)**	• On the German regional level of SH, in I's opinion, the cluster strategy for the cleantech industries as well as other industries like welfare is a little 'chaotic' **(I)**
1.1.2 First level consistency	• [Heiberg]: Det bliver også genspejlet af at det nye (…) aftale mellem Tyskland og Danmark, som kom frem den 21.03 tror jeg. Der har de underskrevet det der nye aftale tror jeg efter 10 år, hvor de også... hvor de faktisk bliver så konkrete som at sige, at det er sådan power electronics som vi skal gå ind for. Og det er jo indenfor de her cleantech. • III: Ja, ja præcis. **(III)**	• For RSD their own strategy for the cross-border cooperation within cleantech is also reflected by the new cooperation agreement between SH and RSD. **(III)**
1.1.3 First level consistency	• Altså vi har jo et samarbejde med delstatsregeringen i Schleswig-Holstein. Så på den måde har vi jo jævnlige møder og dialoger med delstatsregeringen der og finder... og laver jo også jævnlige... nu har du selv årlige samarbejdsaftale. Vi har jo en årlige samarbejdsaftale med delstatsregeringen, og der prøver vi jo at bygge de her ting ind i, kan man sige. Og finde de fælles nævner.	• III mentions that there is a cooperation on the strategy level with SH – in the form of regular meetings and dialogs about strategies. This is reflected by the joint strategy. But at the same time he admits that when it comes to the economic policy strategy development they do not invite somebody of SH to participate. Cross-border exchanges are always only possible in a

	Men jeg tror ikke... jo tror jo det i hvert fald for langt at sige, at vi inden vi går i gang med en strategi-udvikling, inviterer for eksempel delstatsregeringen ind til at sige, hvordan synes de vores strategi skal se ud. Og om omvendt. Sådan tror jeg ikke det fungerer. **(III)**	second step **(III)** (*also possible as 2.1.9 coherence in policy making)*
1.1.4 First level consistency	• Til at starte med var det bare: nu skal vi blive gode venner efter den der brodde historik vi allesammen har haft. Og sammenhæl og alle de her ting. Og at Region Syddanmark og Schleswig-Holstein i hver deres land bliver betragtet som udkantsområder. Det er jo også..., hvad kan sige, det er jo noget de har til fælles, ikke også? Men her de senere år, og senest den der lige er blevet... de har underskrevet en ny samarbejdsaftale her i sidste uge, Region Syddanmark og Schleswig-Holstein **(I)**	• On the regional level the collaboration agreement (strategies 8+9) reflect the fact that SH and RSD are increasingly putting weight on their commonalities, such as being borderlands and also become more specific in their joint strategies, that will have to be aligned to their domestic strategies. **(I)**
1.1.5 First level consistency	• (…) regionen har en opgave med at lave regional erhvervspolitik i regionen(…) de har omkring sådan samlede 200 millioner kroner om året i vores region til at bruge på erhvervsudviklingen. (…) Regionen kan ikke selv (…) bestemme hvad de skal bruges til. Det her det lovbestemt, at regionen skal nedsatte et vækstforum. (…) Vækstforum Syddanmark. Og de skal så også lavet en strategi for hvordan de vil bruge de her penge. **(III)**	• RSD (as a municipality) is responsible for the economic policy in the region. They are by law assigned an amount of 200 mio crowns and obliged to establish a growth forum with different political, public and private actors agreeing on a strategy on how to implement the economic policy instruments (thus use the money) **(III)**
1.1.6 First level consistency	• IV highlights that from his position in the ministry he can only answer on questions regarding the strategy level. He is either not knowledgeable of interactions of instruments on the implementation level, are he is not allowed to talk about them. • On the strategy level IV highlights the importance of the Jutland corridor strategy: as there might be more potentials in the neighbouring regions of the "isolated SJSW region"	• SH is aware of the important role the SJSW region can play in their cross-border strategies. They highlight the Jutland corridor and INTERREG on the strategy level, but at the same time accept that there is no further integration of policy structres on the instrument implementation level than what has been established through INTERREG. The official can not make any statements on a SH positions on what may be going on

	• He states that there is no policy structure integration for the cleantech industry or any industry other than the structures developed by INTERREG. Cross-border regional integration from the ministry's point of view only refers to the INTERREG Germany-Denmark programme region • SJSW has an important function due to existing experiences with cross-border development	the instrument level, as this is not their responsibility **(IV)**
1.2.1 Second level consistency	• [Talking about 2.2.1]: Og det betyder helt konkret, at de ikke vil samarbejde med FCI, med vores projekt, fordi deres projektperiode er længere en vores, så de venter bare til vi dør - vores projekt dør- og så har de det hele for sig selv **(I)**	• I accuses SH cleantech cluster organisations (instruments 10&12) to not cooperate with FCI as there project period is longer than FCIs. There motivation may be that as soon as FCI dies, they can take over by themselves **(I)**
1.2.2 Second level consistency	• [About unexploited synergies between instrument 10 and FCI]: (…) ja jeg tror helt sikkert, der er synergier (…) Og det er klart, hvis virksomhederne ikke kan finde ud hvem de skal går rund til, fordi at der er for mange aktører og aktørerne i øvrigt ikke snakker sammen. Så spilder virksomhederne jo utroligt meget tid. **(I)**	• There is a lack of consistency between the information goals of FCI and those of instrument 10 for example, leading to confusion among the targeted actors. **(I)**
1.2.3 Second level consistency	• [Heiberg]:(…) det er mit indtryk i hvert fald... at det er måske lidt mere sådan dispers i Tyskland, at der findes flere forskellige instrumenter, som måske sammenfattet for de kunne blive sammenfattet og hvor det måske er lidt mere enkelt i Danmark? (…) • Ej jeg tror det er rigtigt, det er også det billede jeg har. Uden at kunne nævne aktørerne. Men det er jo en pointe i sig selv, fordi der er så mange [laughing] og hvis vi ikke kan det. Så kan du være sikker på virksomhederne	• I explains that there are many more cleantech cluster instruments in Germany that are much more diversified than in Denmark. In Denmark there is only Clean that takes care of a big segment of the cleantech industries. In Germany there are the instruments 10-14, were I argues that they do not even know what they are doing among themselves. It is however important that there is some kind of coordination in order to achieve the instrument consistency needed in FCI. That is why I tries to gather the German organisations and get them

	ikke kan det. Altså i Danmark har man ligesom valgt at sige: vi skal have nogle fyrtårne som har lidt flere muskler. Hvor at i Tyskland har man jo både Watt2.0, EE.SH, man har også EE.SK tror jeg det hedder. Så har man IHK, som også laver... og så har man "Wireg" som også laver klynge og noget der rimer på energi og alt så noget. (…) WTSH har du også. Ikke? Så du har... vi sidder bare og name-dropper syv aktører ikke også? Og jeg ved positivt: Tyskerne ved heller ikke altid hvad hinanden laver og vi har forslaget i FCI (…) at FCI tager initiativ til at vi få samlet alle de aktører på tysk side. På dansk side: ja men der er der kun CLEAN. Så det er nemt. Og da jeg er selv ansæt i CLEAN, så det kan jeg godt styre. Men vi bliver nødt til at samle alle de tyske aktører. (…) Det kunne være så nemt, at igangsætte, bare ved at finde en dato, sætte os sammen, og bare koordinere: hvad laver I? Hvad laver vi? Kan vi lave et eller andet sammen? Helt basic. Og så er der de der andre niveauer, som jeg beskrev tidligere. Der er noget koordinering, lave noget sammen og så til sidst noget fusion. Så der bliver enklere, landskabet. **(I)**	at the same table. Coordination would make the instrument mix simpler and more efficient – thus more consistent **(I)**
1.2.4 Second level consistency	• vi har noget... en platform, centreret om Sønderborg og ... det der hedder det danske program "scale-up", som er i forskellige afskygninger i Denmark, men i region Syddanmark er det blandt andet med energieffektivitet centreret om Sønderborg. Forskellen til det du siger nu, det er egentlig at start-up... det er egentlig ikke det... . På dansk side er det ikke problemet at få nok iværksættere. (…) Problemet er at scale virksomheder op, så de bliver til en stor virksomhed på over 1000 medarbejdere. Og det er det vil skal her. **(I)**	• I refers to other instruments than cluster instruments – in this case an instrument to stimulate start-ups in the energy efficiency segment. On the Danish side policy makers are clearly more interested in scaling up existing companies to become global players than getting new start-ups. That strategy might be different in Germany – goal conflicts? (also relates to comprehensiveness – how deeper can cross-border instruments go?) **(I)**

1.2.4 Second level consistency	• Du skal huske på IHK, de har medlemmer, men de er jo af lov tvunget til at være medlemmer i IHK... det vil sige, der er jo ikke nogen... de kan jo ikke melde sig ud [laughs]. **(I)**	• There is a major difference in the way IHK on the German side of FCI and Clean on the Danish side of FCI get their member companies: In Germany they have to be part of the IHK by law! **(I)**
1.2.5 Second level consistency	• The dispersed structure of the different parallel cluster organisation within the Cleantech field is regarded as a problem by the WTSH **(II)**	• WTSH confirms that there is a problematic structure of parallel cluster organisations within the cleantech field **(II)**
1.2.6 Second level consistency	• The EE.SH has no interest in cross-border cooperation because of the project structure of the policies – they are simply not payed for cross-border activities **(II)**	• EE.SH (instrument 10)'s implementing actors are not interested in a cooperation and coordination with cross-border instruments because they are not designed and payed for these kind of activities **(II)**
1.2.7 Second level consistency	• Is a good approach – but are only funded by member companies (JP Joule company, funded this strongly) – the private interests may be too strong here, no public co-funding • Putting somebody like WATT2.0 in charge of the Cluster management instead of EE.SH would have been a smarter approach (policy learning from the Danish side) but now it is hard to change the structures in the short run. CLEAN approach, the Germans agree, is the better **(II)**	• WTSHs employee II would have liked to see somebody like WATT2.0 (instrument 13) involved in FCI as they share similar policy style and policy design processes. The cross-border instrument would have been easier to implement. However, also with Watt2.0 there might be a problem with funding being too biased from the private side (JPJoule being very powerful in there). Now structures are hard to change.
1.2.8 Second level consistency	• [regarding the instrument mix in SH]: Det er lidt mere dispers tænker jeg lidt; det er det min erfaring har været. Men lige på power electronics og energieffektivitetsområdet der synes jeg måske nok... der er måske kommet lidt **(III)**	• III also thinks that the instrument mix for the cleantech industry in SH is more fragmented than in RSD, however on the level of energy efficiency is seeing a growing cooperation potential. **(III)**

1.2.9 Second level consistency	• det gør det ikke nemmere at koordinere med et andet INTERREG projekt i det program, end det er at koordinere med hvilket som helst andet program i en anden pulje. Fordi når de ikke er ens. Så det lige så godt være noget helt andet. Så er det bare navnet der er ens. **(I)**	• Coordination between INTERREG instruments, so between the cross-border instruments in the SJSW region, is not easier than with any other regional instrument because the projects are rather independent **(I)**
1.2.10 Second level consistency	• (…) Vi samarbejder også med alle mulige andre. Eksempelvis projekt zero. Men det er egentlig ikke for at få virksomhedskontakter, dem har vi selv. Det er mere for... lige med projekt zero, der er det måske mere den kommunales... altså projekt zero, må man ikke glemme, det er jo Sønderborgs kommune..., det er måske mere for at få kommunens pontos med ind i det, ikk os? **(I)**	• On the Danish regional instrument level CLEAN is cooperating with a local actor (project zero, a local cluster organsiation by Sønderborgs kommun) in order to get their action alligned with the municipality **(I)**
1.2.11 Second level consistency	• WATT2.0. Det er faktisk... det er drevet lige som CLEAN. De få faktisk [penge] via virksomhedsmedlemmer. Og hvad skal man sige... de har meget mere det samme syn på, at det er virksomheden der skal gøre det. Og de få... virksomhederne betaler også dem for at gøre det, sådan som jeg har forstået det. Og ... men de har så, hvad kan man sige, udfordringen at de har jo ikke fået de penge, EE.SH blev... de er blevet etableret på penge fra økonomiministeriet. I min verden var det jo WATT2.0 der skulle have dem. Fordi de har virksomhederne, de har hånden på kobleren. Men [laughs] det er jo... det [det der ser] nogle andre gode grunde, jeg ikke kender til. Men der tror jeg at det ville have været nemmere den dag i dag hvis WATT2.0 havde været boosted, i stedet for at etablere noget helt nyt.	• There is much greater consistency between instrument 8 and 10 than between 8 and 14 because of their financing. However, the public funding has been given to 14. At the same time, neither 10 or 14 are part of FCI but 14 is cooperating with FCI while 10 does not want to cooperate **(I)**

	• IHK kender dem også... de samarbejder med dem... vi samarbejder rigtig meget med FCI med WATT2.0 og det er jo dem... vi bør jo også samarbejde med EE.SH men de vil ikke samarbejde med os! **(I)**	
1.2.12 Second level consistency	• The Danish solution with only CLEAN for the whole country, is "smarter". • The private-public funding of Clean is the key here • In Denmark the organisation does not have to fight with other organisations for their field of expertise – in Germany the fields of practice are overlapping – this requires optimisation. **(II)**	• II argues that the Danish solution with CLEAN as the major cluster organisation, that is private-publicly fundet, is smarter than in Germany, where WTSH has to fight with other organisations for their field of expertise. These overlapping fields of practice in Germany reflect Second level inconsistency and require coordination **(II)**
1.3.1 Third level consistency	• (…) de har underskrevet en ny samarbejdsaftale her i sidste uge, RSD og SH hvor at de er blevet så specifikt at sige: man gerne sammenarbejde indenfor noget der hedder industriel elektronik. Der er man helt ned i materien (…) og det bliver også lidt nemmere for os der prøver at, hvad kan man sige, at implementere strategierne. Når vi skal sige, hvem er målgruppen, det er? Bang. Det er dem, ikke også? Det bliver også lidt nemmere fordi virksomhederne, altså dem der skal have gavn af det her, dem vi allesammen prøver at hjælpe, at de kan begynde at se sig selv når vi kommer ned på det her niveau, og kan kalde industriel elektronik. **(I)** • [Heiberg]: Men du synes altså i hvert fald på strategiplanen, der bliver det mere... altså nu er vi også lidt på proces, altså på tidsplanen, men der synes du at der er sådan en tendens til at det her det bliver mere specifikt? • Ja. Og det er positivt **(I)**	• On the regional level the collaboration agreement (strategies 8+9) between RSD and SH is an example of a recent step towards more alignment of cross-border strategies with the FCI instrument. That is a positive development towards more element consistency **(I)**

1.3.2 Third level consistency	• (…) hvis jeg lige runder den danske stat først. Altså, også i sidste uge. Der er sket meget i sidste uge, der kom der en ny eksportstrategi, fokuseret på energiområdet. Hvor Tyskland er... altså det er lidt unikt ved den der eksportstrategi, der er at man ligesom har valgt nogle markeder, hvor Danmarks skal... hvad kan man sige... blive bedre til at eksportere til. Og der er Tyskland ikke mærkeligt et af de lande (…) Det er fjernvarme, og energieffektivitet der er fokusområdet. Så der kan du se de samme mønstre at man bliver mere og mere specifikt **(I)**	• On the Danish national level the export strategy of the Danish state highlights the importance of collaboration and trade within the energy efficiency area and district heating, which highly corresponds to the targeted areas of FCI. Consistency between export strategy and FCI instrument improves. **(I)**
1.3.3 Third level consistency	• Tyskland, der... der på stats-niveauet, der er "Energiewende" og det er der meget snak om. Jeg har stadig til gode eller... og det er også muligt, så ved jeg ikke nok om det. Jeg mangler måske at man.… man har "Energiewende" og så, man har strategien nu, men man mangler lidt den der handlingsplan. Den er kommet men handlingsplanen skal jo også udmøntes noget. Og det mangler jeg at se hvad man så udmønter det til. Eller hvordan udmøntningen foregår af handlingsplanen. **(I)**	• On the German national level the predominant energy strategy is 'Energiewende' but while the strategy is good, I is missing a plan of action, a set of instruments to reach the strategies' goal, at least from his cross-border perspective. **(I)**
1.3.4 Third level consistency	• Altså første skridt det er....det er jo altid at begynde at snakke sammen og koordinere. Så kan det være at de har nogen services, som vi ikke har, og så kan vi henvise til hinanden. Det er først, step et. Step to, det er jo at man begynder at slog pjalterne sammen. Ikke organisatorisk nødvendigvis, men at man begynder at lave aktiviteter, som kan gøres større og bedre, fordi for den målgruppe vi i fællesskab har. Og en tredje skridt det ville så være... om man kan forenkle det her klynge landskab ved at- hvad kan man sige... fusionere (…) integrere det (…)Og det er jo også det man kan læse af	• I describes his understanding of different levels of policy integration on the level of cleantech-cluster instruments → he believes that the strategies in Denmark and Germany are consistent with this understanding and a goal reaching actual integration. However, he thinks that this is being forgotten by the actors on the regional implementation level of SH. **(I)**

	strategierne fra regionerne og staten. Og det bliver lidt glemt, synes jeg **(I)**	
1.3.5 Third level consistency	• Jo så vi har det som... jeg tror den hedder INTERREG North Sea region, hvor vi har Northern connections som er et stort, stort klynge og regionsprojekt. Hvor man arbejder med... det er Hamborg, Schleswig-Holstein, og Norge der er med. (…) Jyllandskorridoren er også med. Både Syddanmark, Midt og Nord (…) men det er meget meget meget- hvad kan man sige politisk drevet projekt. Der er ikke nogen virksomheder, der kan se sig selv i det. Fordi det man snakker om er regionernes smarte specialisering. (…) Men om der kommer noget ud af det, det skal jeg ikke kunne sige. Men det er meget langt væk fra virksomhederne. Så det vil jeg næsten ikke kalde et instrument. Det vil jeg næsten kalde noget strategi-udvikling.**(I)** •	• I refers to Instrument 16 (Northern Connections) as a big cross-border cluster instrument with different regions along the North Sea coast participating. But there is almost no real implementation of this instrument. Its nature is mainly political and I would rather call it strategy development than an instrument. However, if it is strategy development, than the implementation is missing. **(I)**
1.3.6 Third level consistency	• He is disappointed by the EU, as they do not live up to their good strategies if they take away the funding to early and make it too administrative. **(II)**	• II sees a lack of consistency between EU strategies and instruments (looking at the example of FCI), as funding is being taken away from the projects too early and the instruments are much too heavy administratively. **(II)**
1.3.7 Third level consistency	• For the region of Schleswig-Holstein the cross-border collaboration within FCI is rather unimportant. They are not participating in it in any respect. Their strategies does not directly affect FCI • that SH highlights the importance of power electronics in their strategy does not play much of a role for implementing actors (did not even know about the new cooperation strategy)	• The regional administration has little interest in FCI, their strategies only mention cross-border actions but is not really reflected by their choice of instruments. The other way round: for the implementing actors the strategy of the regional government does not really play much of a role (changes in the strategy are not even noticed on the instrument level) The main cluster

	Schleswig-Holstein focusses on the EE.SH as their major instrument for the cleantech industries **(II)**	instrument they focus on regarding the cleantech industries is the EE.SH **(II)**
1.3.8 Third level consistency	• det er derfor kan man sige at vi også medfinansierer så nogen projekt som Furgy Clean, PE:region. Og på den måde ser vi at vi i Syddanmark sammen med dele... eh sammen med Schleswig-Holstein har en erhvervsmæssig styrke inden på det her område. Og det vil vi gerne videreudvikle som en overorganisation af virksomheder i det område inden det faglige domæne. **(III)**	• RSD is financing and supporting FCI and PE:Region (thus including them in their strategies) because they see a common strength in the energy efficiency part of the cleantech industries with SH. They would like to further develop this strategic cooperation within cleantech **(III)**
1.3.9 Third level consistency	• Så har vi nogle andre udfordringer i CLEAN, fordi CLEAN er et produkt af en fusion mellem Copenhagen Cleantech og Lean Energy Cluster i sin tid kan man sige. Og CLEAN har et noget bredere faglige område end vi i Syddanmark har i vores erhvervsudviklingsstrategi og der har vi nogen gang nogle issues i forhold til... for CLEAN har et bredere del af cleantech, fordi der er også vand og alt muligt andet... og bioenergi og alt så noget. Og det er ikke noget som vi understøtter eller finansierer projekter indenfor.**(III)** • **[**Heiberg]: Og det vil sige der er sådan nogle små målkonflikter kan man sige, men i sidste ende, kan man godt koordinere det(…)? • Ja, ja præcis. **(III)**	• RSD is having some goal conflicts between their strategy and the operating fields of CLEAN but those differences are easy to negotiate through, as RSD can simply chose what to support from the cluster services that CLEAN offers. Consistency is thus kept in place. **(III)**
1.3.10 Third level consistency	• Typisk de instrumenter der finder anvendelse her i Syddanmark i forhold til den branche der, det er jo typisk nogen vi har finansieret. Sortanset alle sammen. • [Heiberg]: Så er der koordinering.? • Sønderskov: Ja det tænker jeg. Der prøver vi i hvert fald at være opmærksom og bygge de her ting i det **(III)**	• Instruments that are being applied in RSD are also being coordinated with the strategies because they are all funded by RSD **(III)**

1.3.11 Third level consistency	• så bruger vi jo så de strukturfondsmidler og de finansieringsredskaber som vækstforum og regionen er spillet i hånden, dem bruger vi på at sætte aktiviteter i gang der understøtter målene indenfor det strategiske fokusområde som vi en gang har bestemt, der skal være. (…) Og der er det typisk der har CLEAN en stor rolle i forhold som operatør på de projekter ved også støtte CLEAN som den samarbejdsplatform det er. **(III)**	• In RSD the strategy development is directly related to the assignment of certain organisations to do implement instruments to achieve the goals written in the strategy. CLEAN has an important role within the cleantech industries **(III)**

2 Coherence of cross-border policy processes: quotes and analytical units		**Paraphrases**
2.1.1 Coherence in policy making	• Jeg bemærker bare, en forskel mellem dansk og tysk, den måde de kører klynger på. Det er at Denmark de sætter som krav, at man skal have private penge ind, altså virksomhedspenge ind, for at give offentlige midler. I Tyskland, er det kommunen eller staten, der lægger rigtig penge som vil gives med de her papirpenge man kan få. Og det gør altså, at der er ikke nogen der stiller spørgsmål til, hvad de skabes i et projekt, i hvad skal man sige, EE.SH eller windcomm (…)så er de jo sådanset fuldstændig indifferente overfor, hvilke resultater de egentlig bør skabe. **(I)**	• I observes a major difference in the policy-making of cleantech cluster-instruments in Demnark and Germany – affecting the cross-border policy mix: In Denmark cluster organisations are obliged to private funding (of their member companies) in order to receive any public money. In Germany the local municipality, the federal state region or the nation pay for the cluster organisations entirely – this creates a certain incentive to be indifferent for the actors on the implementation level **(I)**
2.1.2 Coherence in policy making	• det dansk-tyske INTERREG program: (…) vores indfaldsvinkel i tilblivelsen af programmerne har vi prøvet at dreje... og det er sket over... flere programperioder (…)vi er gået ind og drejede det har haft et ønske om at dreje det mere i et erhvervsudviklingsretning i højere grad end en people to people, social, kulturel projekt, eller kulturel indhold. Så det er i hvert fald en af de måde, vi har gjort det på. Der har vi taget udgangspunkt i den strategi, som vi har haft på erhvervsudviklingsområdet og prøvet at få den afspejlet så vidt muligt i nogen af de indsatsområder, vi	• RSD has tried to influence the design of the cross-border INTERREG instruments (including FCI) in a direction that was more industry related and that had a stronger focus on the energy efficiency and cleantech industries in order to match the goals of the RSD strategy as much as possible. • From RSD's (III) perspective there is a lot of potential because both sides have much in common within energy efficiency. **(III)**

	kunne se, for at vi kunne bruge det gode instrument, som INTERREG er, til at styrke... til at understøtte de erhvervsmæssig styrker vi har fælles på tværs af grænsen **(III)** • Og der er energieffektiviseringsområde, en af de oplagte, og en af dem der kobler sig allerbedst på hvad der sker nord og syd for grænsen. På andre af de forretningsområder vi har, er det lidt vanskeligere. Men her har vi faktisk ret ... jeg vil ikke sige heldige... men der har faktisk, rigtigt meget til fælles.**(III)**	
2.1.3 Coherence in policy making	• det var sådan lidt bølgegang. Jeg vil faktisk sige vi startede faktisk, som et initiativ over grænseoverskridende... vi startede som et meget fokuseret klynge indenfor køleteknologi og varmepumper teknologi, der hed KSA. Altså det man ligesom kan sige, udviklingen for os, har været at vi er blevet både større i geografisk spredning, men også i teknologisk scope. Altså det er den vej vi er gået for ligesom at indlemme flere og flere medlemmer. Udfordringen er at det bliver slidt is hælen. Til sidst kan du blive så bred, så medlemmerne ikke kan ser sig selv i det, så det er sådan en balancegang. Men KSA det startede egentlig med at Jørn Mads Klausen havde været over i Silicon Valley og hørt at det der klynge fungerede meget godt. Så det ville han også have her i Sønderjylland. (…) KSA, der havde til formål at stimulere den branche både på dansk og tysk side. Overvægtig på dansk side, fordi klynge sekretariatet det lå i Danmark og gør det stadigvæk. Og man kan sige, så siden der... det kørte i nogen år, KSA, som et projekt. Og det er jo udfordringen ved at være en klyngeorganisation: at det er et projekt og projektet det	• The designing of CLEAN was inspired by Silicon Valley. AND it started, as KSA, with a cross-border rational focussing on the SJSW (with a major focus on Denmark) area and the small segment of cooling and heatpump technology within the cleantech industries. **(I)** • It then grew in geography and scope to become a nation wide cluster organisation with a growing number of member companies everywhere in the country. But growth caused that funding to a growing part came from Danmark and was not intended to be used in Germany – this caused the cross-border activities of KSA stop – untill in 2014 they were revived with CLEAN getting the project responsibility for FCI with help of the INTERREG program. CLEAN could still built there work in FCI upon the contacts and knowledge from their former cross-border activities, even though a lot has changed since then. **(I)**

	udløber og hvad så? Men den måde vi ligesom kunne få bolten til at rulle det var at vi lavede nye projekter som egentlig gjorde at vi blev brede i teknologi og teknologisk scope. Men det gjorde også sådan at pengene lå i danske kasser og måtte kun bruges i Danmark og det gjorde så at vores tysk islidt(?), det forsvandt i en årrække. Indtil her i 2014, hvor vi fik den nye INTERREG projekt, Furgy Clean Innovation. Og det var ligesom det der har genoplivet det. Altså, der jo meget..., du ved, sådan noget her det er meget person afhængig og der er meget, der er forvundet siden 2006, da vi startede med at være grænseoverskridende til nu. Men der er alligevel en videns base, vi kan bygge videre på, så vi ikke starter helt fra scratch **(I)**	
2.1.4 Coherence in policy making	• Region Syddanmark har en lang overgang... eller har en lang historik for ligesom at lave strategier sammen med Schleswig-Holstein. (…) Det har løbet og man er blevet mere (…) fokuseret som tiden er gået **(I)**	• RSD and SH have a long tradition in cross-border strategy development, also targeting the SJSW region. I impression is that this process has become more focussed (on specific industries) thus aligned with the domestic strategies (referring to 1.2.4). **(I)**
2.1.5 Coherence in policy making	• Så har men det her Sønderjylland-Flensborg hængsel. Men jeg vil sige erfaringen den er opbygget her (instrument-niveauet, myndighederne), den er aldrig nået her ned... aldrig nået her ned (til virksomhederne). Jeg ville sige FCI, ... altså, man kan sige, pilen er stoppet her. FCI, det har været. Vi har haft gavn her, at det her på erhvervsfremme niveau, altså på instrument niveau, det har været eksisterende. Så det har været ret nemt at, hvad kan man sige at finde dem og aftaler at indgår et projekt. Men det er først nu her i FCI, vil jeg be-og påstår at vi begynder at -hvad kan man sige - nu tegner vi kun stiplet [draws an arrow from instrument level to company level], fordi vi er der ikke endnu, at nå	• I clearly makes a statement about the integration of the policy structres reflected by coherence in policy making: There are experiences of cross-border policy making on the instrument level (from the former Furgy project). BUT these experiences have not led to integrated instruments that actually have included the targeted actors (the companies) into the projects. Only now in FCI they are beginning to do so. Thus policy structre integration means also including both German and Danish companies into the projects in a coherent way. That is what they are trying at the moment, but they are not there yet. **(I)**

	her ned til, fordi der har ikke været meget virksomhedsinddragelse i det gamle Furgy projekt **(I)**	
2.1.6 Coherence in policy making	• Derudover kan man sige, så er CLEAN også kommet til os og har sagt, ja men vi kan også bruge INTERREG projekter, INTERREG midlerne til at lave noget grænseoverskridende til det her fagområde på det her faglige domæneområde. (…) Der er faktisk en helt række faglige sammenfæld der. (…) derfor kan man sige at vi også medfinansierer så nogen projekt som Furgy Clean, PE:region. Og på den måde ser vi at vi i Syddanmark sammen med dele... eh sammen med Schleswig-Holstein har en erhvervsmæssig styrke inden på det her område. • Så bliver vi jo nogle gange også ansøgt om medfinansiering, hvor de her partnere siger: ja man vil ikke gerne gøre det? Og det vi så gør når vi få sådan en ansøgning om medfinansiering, der kigger vi så på: Ja men er den indenfor vores forretningsområde. (…) Så det gør vi jo i høj grad. Altså Furgy og PE:Region, dem har vi jo medfinansieret. Og det er jo også vores mulighed for at få indflydelse på projekterne **(III)**	• CLEAN approached the RSD to engange in cross-border instruments like PE:Region and FCI. While the common industrial patterns convinced RSD to co-fund the instruments, the initial application and iniative came from CLEAN. The policy-making in this case is initiated from the instrument level and then adjusted by the regional strategy-makers according to their interests (if they such as in this case decide to co-finance the cross-border instruments) **(III)**
2.1.7 Coherence in policy making	• (…) vi ved at der er en vilje i hvert fald hos WTSH, som vi senest har været i dialog med (og dem har vi jo sådanset løbende dialog med) og kan se de her tegninger i forhold til at lave cross-cluster kollaboration... som vi kalder sådan noget. Så der synes jeg det er meget godt. Men mit indtryk er sådanset at der er mange.... at delstatsregeringen måske ikke helt kan... og styre det hele stramt fra oven... for der er rigtig mange andre aktører nedenunder (kommuner, byer, kreise) og alt muligt andet. **(III)**	• RSD's **III** sees a willingness among WTSH to be in dialogue with the Danish organisations in cross-border cluster collaborations (while this does not mean cross-border cluster development) – referring to 2.2.6 • On the policy-making side, RSD, has the impression that the SH regional administration has difficulties to efficiently steer, because the policy and governance structres are so diverse under the SH level (cities, municipalities, Kreise) **(III)**

2.1.8 Coherence in policy making	• [talking about the integration of certain instruments to the RSD strategy] Det er i hvert fald en af de ting som vi evaluer og kigger på hvis vi få ansøgninger til konkrete aktiviteter. Så ser vi på, ja men hvad er det vi har gang i i forvejen? og hvem er med i partnergruppen og kan der eventuelt være nogen partner der skal kobles med ind her ind i en koordinerende rolle? Sådan det prøver vi i hvert fald i det omfang vi kan styre det når vi nu giver penge til forskellige ting at tage højde for. Så synes jeg det lykkedes. • [Heiberg]: Ja og det er jo så også nemmere igen, end det måske er på den tyske side. • Sønderskov: Ja. **(III)**	• The integration of cross-border instruments to the regional strategy is dependent on what the region is funding beforehand, and who of the existing organisations could be used in a coordinating role **(III)**
2.2.1 Coherence in policy implementation	• [talking about the implementation of cleantech clusters in SH] (…) og det vil jeg helst ikke citeres for, men jeg hører på vandrørene, at dem som sidder og kører det, de sidder bare og... hvad skal man sige, de er projektryttere, de sidder og få løn for noget, men de er ikke interesseret i at der sker noget, at der er noget impact **(I)** • Men det er jo ikke nogen konstruktiv samarbejdsform. **(I)**	• There are rumours that those actors who implement the cleantech cluster instruments in SH are mainly administering the projects without having a big interest in making a real impact **(I, does not want to be cited for this)** • The cross-border policy implementation is hindered by unconstructive, unwillingness to cooperate in SH **(I)**
2.2.2 Coherence in policy implementation	• Klynger, det er jo sådan lidt et politisk instrument [laughing] (…) men det er i denne sammenhæng, der har der været mange sådan, lidt forkølede (…) forsøg på at lave klynger, hvor CLEAN nok er en af de få, som ren faktisk har vist sig at være økonomisk bæredygtig. Og vi har fundet et klynge- forretningsmodel, den er ret risky-business, for at være klynge, fordi du har	• CLEAN, as the one cluster instrument for the energy efficiency segment in the whole of Denmark, has evolved about 10 years ago with changing names along the way (reference to Lean Energy and Cleantech Cluster Denmark). The implementation is based on quite a “risky business” approach, as I describes it,

	likviditets-udfordringer og det er hele tiden at give private midler og offentlige midler og ofte er der også noget balancegang i. Vi har faktisk fundet en model, så det lykkedes os at holde - i sidste år holdt vi 10 års jubilæum - så det vil sige, vi er 11 år gammel nu. Har taget lidt forskellige former og lidt forskellige navne undervejs men det er den sammen grundstam **(I)**	with liquidity challenges as it builds upon a mix of private and public funding **(I)**
2.2.3 Coherence in policy implementation	• (…)i hvert fald i Deutschland-Danmark, der har de umåleligt svært ved at får virksomheder ind. Fordi at det enormt administrativ tungt. Du skal vente, du bruger din penge i dag, og så få du først 60 % af de pengene du har brugt, får du tilbage om 6-9 måneder. Det er der mange virksomheder, som ikke kan holde til. Fordi de skal have smør på bordet i morgen. Det er designet til... hvad kan man sige... offentlige myndigheder **(I)**	• I argues that there is an incoherence in the way the INTERREG instruments, like FCI, are being implemented in the cross-border region, and the way CLEAN would implement their cluster activities in Denmark: INTERREG is too heavy administratively, the cashflows take too long. It is rather designed for public authorities **(I)**
2.2.4 Coherence in policy implementation	• Between these organisations there is a certain readiness for cooperation present but it can be optimised clearly! • Cooperation among cluster organisations comes in so called "Facharbeitsgruppen", mostly that works well (sometimes it does not because of personal animosities) **(II)**	• Among the German cluster organisations in the SJSW region cooperation does work quite well, according to II, but it could be better – sometimes it is hindred by personal animosities **(II)**
2.2.5 Coherence in policy implementation	• Within FCI the cooperation among the project partners works quite well (different "Arbeitspakete", working packages) à example WTSH responsible for the "Technologievorausschau" (information Service also for Danish companies **(II)**	• Among the cooperation partners within FCI coordination of work tasks (in so called "Arbeitspaketen") works well **(II)**
2.2.6 Coherence in policy implementation	• Så vi har 4 klyngeorganisationer i regionen som vi siger, det indenfor de her forretningsområder, det er de klyngeorganisationer, der samarbejdsplatform indenfor	• There is a cross-border exchange initiated by RSD, where all four cluster organisations of different industry areas are coming together and meet with

	det tema området. De 4 klynger mødes vi med sådan 4 gange om året for at snakke om strategiske ting og sager. Det næste møde finder sted den 11. maj 2017. Og her kommer Ullrich Haussner fra WTSH i Kiel, og kommer og deltager i det møde fordi WTSH er dem som står for klyngeudviklingen på Schleswig-Holstein/delstatsregeringens niveau der. Og for at få lavet de der koblinger til klyngerne på tværs af grænsen. • [Heiberg]: Og det gælder så for alle de her klyngeområder og også for grænseoverskridende? Eller er grænseoverskridende helt udenfor? • Sønderskov: Nej, dem tager vi... dem har vi ikke... altså du tænker på Furgy Clean og sådan noget? Ej, det tager vi ikke med, for der tænker vi: ja men hvem er egentlig deltagerne i Furgy Clean, ja men hoved deltagerne det er jo for eksempel CLEAN og WTSH. Og så sidder de jo sammen på den måde her. Så gør vi det på den måde i stedet for. **(III)**	WTSH to work out different possible synergies. Interestingly, this however is not related to FCI, but it addresses the major actors as in FCI – nevertheless there are parallel structures, and SH is not showing the same degree of commitment to engage in this kind of exchange. **(III)**
2.2.7 Coherence in policy implementation	• (…) for det har måske på nogle områder hældet lidt i forholdt til at få med de der gode forbindelser på Cluster til Cluster niveauet. (…) Altså CLEAN... det er sådan lidt, der er vi længst fremme. Men på nogle af de andre områder der har det hældet lidt. Fordi temaer er lidt forskellige (…) og der har de måske nogen gang har haft lidt vanskeligt med at sige: ja ok, hvad er den faglige fælles nævner så? Og det tror jeg vi skal prøve igen og ligesom starte lidt forfra og sige, ja men ok, hvor er de der konneks hen. Det er blandt... det er noget af det som Ullrich er meget optaget af. Vi havde et møde tidligere på året med ham, og så noget. Så det	• Reffering to 2.2.6, among the cluster instruments CLEAN is the most developed with respect to cross-border activities (due to PE:Region and FCI). Within the other cluster organisations and fields the cooperation to find possible synergies has been more difficult. One of the WTSH people, Ullrich, is currently engaging in activating the dialogue between the German and the Danish clusters further **(III)**

	glæder jeg mig rigtig meget til. Og det tror jeg der vil være noget af det der vil sætte måske yderligere gang i samarbejdet på tværs af grænserne. **(III)**	
2.3.1 Coherences in policy style	• Jeg vil sige SH på klynge udviklingspolitikken, der er de meget umodne i forhold til RSD **(I)**	• I thinks the policy-making processes for cluster instruments in SH are very immature **(I)**
2.3.2 Coherences in policy style	• [talking about the style of processes on the German side of the CBR]: At vi altså gerne gøre en forskel og den forskel vil vi gøre ud i virksomhederne. Vi skal ikke kun sidde og lave kaffeemøder med instrument-aktørerne. Vi skal ned i virkeligheden. Heiberg: Og den forståelse den mangles der måske nogen gang på den tyske side, synes du? I: Det synes jeg i høj grad. At man glemmer og spørger sig selv: hvorfor sidder jeg her? Hvorfor er jeg her? Hvem er det jeg skal hjælpe? **(I)**	• I criticises the attitude (captured in the policy style) in policy implementation processes among the German cleantech cluster organisations (instruments). They are missing the understanding of what is the reason they are doing their work for. **(I)**
2.3.3 Coherences in policy style	• Men vi bliver nødt til at samle alle de tyske aktører. Men det hører jeg bare nede fra nogen, jeg ikke vil nævne for at hænge nogen ud, at det vil de nok ikke. Det bliver svært fordi, det vil de ikke. • [Heiberg]: Det altså her på instrument-planen, hvor du hører det? At de ikke vil det? • Ja. **(I)**	• I argues that it is very difficult to gather all the German cluster organisations that relate to the cleantech industries because they do not want to gather. This may reflect a major difference in policy style. **(I)**

3 Cross-border policy credibility: quotes and analytical units		**Paraphrases**
3.1.1 Reliability of the cross-border	• [talking about SHs cluster instruments]: De har haft nogen, hvad kan man sige, nogen små projekter, de	• The cluster-instruments implemented in SH to support the cleantech/ energy industries have been not very

policy elements and processes	kalder for klynger. Og det der har været gældende for, hvad kan man sige, energiområdet, det er så har man haft, windcomm projektet - som bliver kørt som et projekt. Og så dør det her. Så har de fået Erneuerbare Energie SH, og der... EE.SH... og det bliver kørt på præcis sammen made **(I)**	reliable, as they were merely driven as projects (windcomm, EE.SH) that are dying at some point **(I)**
3.1.2 Reliability of the cross-border policy elements and processes	• [talking about instrument 16]: Men jeg tror sgu ikke på det. Fordi der er ikke nogen, der vil afgive noget som helst til de andre regioner, der kommer i stykket. Det er et rent proforma projekt. **(I)**	• Instrument 16 (Northern Connections) is a plain "proforma" instrument, but there is no actual implementation – thus I does not believe in this kind of action. **(I)**
3.1.3 Reliability of the cross-border policy elements and processes	• There is a need for more reliability in projects like Furgy. They need to be thought more sustainable (long-term), employee fluctuation is too high as well (II is the 4th only within WTSH dealing with Furgy) **(II)**	• FCI is not designed sustainable enough, due to its project based character, which also results in a very high employee fluctuation within the project (WTSH has seen 4 employees working on FCI already) **(II)**
3.1.4 Reliability of the cross-border policy elements and processes	• (…) jeg synes egentlig de er fremsynede nok, i og med at der strategier som går længer ud end projektperioden. Men det er et projekt. Og definitionen af et projekt er jo at det har en ende. Men jeg vil så sige, jeg synes at jeg vil rose regionerne og INTERREG programmet ved at sætte som krav.... Det er altid et krav at projekterne skal hvile i sig selv bagefter - det gør de aldrig. Men det jeg synes der er godt ved INTERREG, det er at de ligesom holder os op på ... I kan jo ikke lov at det bliver økonomisk bæredygtig, men i skal lave et reelt indsats for at forsøge at det bliver.**(I)**	• I believes that the cross-border policy strategies are actually designed in a quite sustainable and credible way, as they are designed for periods that go longer than actual cross-border instruments. The problem is that the project character of the instruments, makes them lose effect after the period is over. However, INTERREG requires the projects to become economically sustainable after the end of the period. Even though this does not happen, it is good that actors attempt to make it happen **(I)**
3.1.5 Reliability of the cross-border policy elements and processes	• Men CLEAN er jo faktisk en virksomhed. Vi er jo ikke en offentlig institution, vi er jo en selvegnende forening. Vi er en virksomhed. Og jeg vil sige det er os der skubber til det her billede. At sige: vi skal simpelthen ned til virksomhederne og høre hvad vi de have os til at	• If the cross-border instruments (like FCI) do not manage to reach the actually targeted actors (companies) than the policy mix is not credible but "headless" **(I)**

	gøre? For ellers er det simpelthen hovedløs. Så er det bare os der sidder og hæver løn **(I)**	
3.1.6 Reliability of the cross-border policy elements and processes	• What Schleswig-Holstein writes in their strategies is regarded sceptically from the instrument level à often the regional strategies are mere "Lippenbekundungen" **(II)**	• German implementing actors on the regional level (WTSH) question the credibility of the regional cross-border strategies → often they are only "Lippenbekundungen" **(II)**
3.1.7 Reliability of the cross-border policy elements and processes	• Difficult for credibility of cross-border policies in Germany: • the funding comes from different public pots and it is bound to very clear rationales (not including cross-border activities) • it is project based (also for only SH cluster organisations): thus, the sustainability of the policies is not highlighted as strongly **(II)**	• The actual cross-border instrument's credibility is hampered by the funding only coming from national or regional pots with rationales restricted to the confines of the national or regional borders, and the project based character of any cluster activities (cross-border as well as the ones only operated in SH) **(II)**
3.1.8 Reliability of the cross-border policy elements and processes	• The cross-border structures are too complex. A bigger integration of the structures is hardly imaginable for II • The Danish perspective may be different: expanding towards Germany (much bigger market) makes completely sense for them. For the SH companies this step is not nearly as rational when they are growing – in Germany they can grow and to bigger European countries such as France or even the US. • For now SH, and the German side should first do their own homework – get the policy structures in SH in an order before being able to actually contribute to further cross-border policy integration. • For now: Cluster are a good (soft instrument to start with) – going deeper is not absolutely not realistic for now as the German organisations have no room for action à the WTSH would not be in the position to impose any pressure for change to the status quo (thus change low level of policy structure integration) • Change must come about from the political sphere **(II)**	• The German perspective from the regional instrument level is that a further integration of the policy structres is hard to imagine due to the reason named in 3.1.7 • For Danish actors strategies pointing to this end may have a much higher credibility, because for Danish companies it may be much more rational to seek to enter the German marked than vice-versa • Before policy structres can become more integrated the German side needs to do its homework and become more coherent internally • For now going beyond cluster is not credible to the German implementing actors and they do not see themselves in the position to change this – change of the structres needs to come about from the regional governance level/the political sphere. **(II) (comprehensiveness)**

3.1.9 Reliability of the cross-border policy elements and processes	• For the IHK **[II, Meyer]** the cross-border topic is very relevant for the future, particularly for the tourism in the very close border region around Flensborg also Furgy is important for the IHK therefor • Particularly the fact that the knowledge of the Danish language is much better in the Flensborg are makes cross-border activities of the companies easier here. **(II)**	• The credibility of cross-border strategies, also within the cleantech sector, varies for actors across SH with those being in the very close to the border areas (such as IHK Flensborg) putting it much higher up on the agenda than in other parts of the region (like WTSH in Kiel). A major reason are the natural linkages between the close border regions, due to big minorities and language competences **(II)**
3.1.10 Reliability of the cross-border policy elements and processes	• At det så skulle gælde sig i INTERREG finansierede projekter, at de så skulle kunne have en særlig mulighed for at være selvbærende. Ikke i forhold til klyngeorganisationer. Det tror jeg simpelthen ikke. Så skal man finde nogle nye samarbejdsmodeller. Men det er jo noget der bliver talt om, og noget der bliver arbejdet på og noget der bliver ledt efter hele tiden. • Dog, vil jeg så sige at CLEAN og for eksempel så nogen som Offshore Energy har faktisk en forholdsvis stor..., særlig CLEAN, men det er også med offentlige midler..., en forholdsvis stor kontingent base, en økonomisk kontingentbase... deres medlemsbetaling, på den måde • Og det er jo noget i denne retning som man tænker at det er den måde at man skal være bæredygtige på. • [Heiberg]:Ja og så bliver det jo endnu sværere når man tager en tysk side (…) hvor der kun er offentlige finansieringer. • Ja formentlig, ville det blive endnu sværere. Så det er ikke sådan... jeg tror ikke sådan rigtig det sker umiddelbart. **(III)**	• Cluster organisations always have difficulties getting economically sustainable. They do need public support. This weakens the credibility of strategies like in INTERREG. CLEAN and Offshore Energy however have reached very high amounts of private support being put in, so their business concepts should be targeted also for other cross-border organistions, that try to develop a cross-border cluster for the cleantech industries (like FCI). This appears to be even harder to achieve on the German side of the CBR **(III)**
3.1.11 Reliability of the cross-border	• Actors act to opportunistic: If a SH company wants to grow and needs support for innovative projects, it will most likely ask for help in SH, the cross-border alternative is not realistic.	• II does generally not believe that the cross-border policy structures can affect the innovative outputs of the companies in SH much: if they want to grow, SH companies will most likely find cooperating partners

policy elements and processes	• Market forces are always stronger than the structures you can impose on them **(II)**	anywhere in the world and not in DK. Cross-border cooperation is not a realistic alternative, therefor why integrate policy structres?

4 Cross-border policy comprehensiveness: quotes and analytical units		**Paraphrases**
4.1.1 Comprehensiveness of cross-border elements	• More room for action would be nice **(II)**	• WTSH would embrace the idea of having more room for action on the implementation level. **(II)**
4.1.2 Comprehensiveness of cross-border elements	• blandt andet Furyg Clean og PE:region og så noget er gode eksempler på at der er vi sådanset godt på vej i forhold til... også på uddannelsesområdet der har vi et meget tæt samarbejde mellem SDU, Sønderborg og inden for de her områder og Fachhochschule Flensborg, og Kiel **(III)**	• III thinks that compared to other fields they have made quite some progress in implementing cross-border policies within energy efficiency (FCI and PE:region) and in the educational sector. **(III)**
4.1.3 Comprehensiveness of cross-border elements	• (…) hvis du vil have et innovationssammenarbejde som ikke lige er et INTERREG projekt - fordi INTERREG projekterne er så administrativ tunge at det er svært at få virksomhederne ind i dem - så du skulle ud og finde andre offentlige midler i mindre tunge programmer. Men så skal du egentlig ansøge to steder både i Danmark og Tyskland for at lave grænseoverskridende samarbejde. Og det er bare bøvlet. Fordi at den danske stat ikke giver ud penge til tyske virksomheder og vice-versa. Så det er utroligt bøvlet og der er instrumenterne faktisk ikke givet til, at rent faktisk følge op på konkret niveau at lave grænseoverskridende samarbejde. **(I)**	• It is difficult to go beyond a cooperartion like INTERREG and cluster instruments because if you leave INTERREG and apply for funding on the national or regional levels, then you would have to apply in different countries because money from national funds can not be used in cross-border activities. This proceses is work intensive administratively. This is why the instruments are not really designed for a cross-border collaborations and a more comprehensive cross-border policy mix may be difficult to achieve **(I)**
4.1.4 Comprehensiveness of cross-border elements	• [Heiberg] Så det vil sige, uden at vi havde haft INTERREG nu i de sidste 25 år jo, men indenfor cleantech branchen, ville der ikke være et grænseoverskridende samarbejde, tror du ikke?	• Without INTERREG there would not be any cross-border policy collaboration in the region and the industry apart from the commercial one. But there is a big potential to support innovators in the cross-border

	• Nej. (…) kun kommercielt. Den der er nær forstående kommercielt eller længere ned i innovationskæden, de har brug for offentlig støtte. Det anerkender jeg 100%, for ellers ville det ikke ske. Og der er et stort potentiale for at skubbe noget hen mod det kommercielle. **(I)**	policy mix could manage to be more comprehensive. **(I)**
4.1.5 Comprehensiveness of cross-border elements	• [Heiberg] alt der går grænseoverskridende, synes jeg i hvert fald, hvis jeg kigger på situationen nu. Så er det jo INTERREG, så det kommer fra EU, ikk? • Sønderskov: Jo. Men for eksempel, ville vi jo ikke kunne bruge, danske strukturfondsmidler til at støtte nordtyske virksomheder. Det kan man jo ikke gøre. Og man kan heller ikke bruge pengene til... at give til... ja man kunne måske delvis godt bruge det til at købe ydelser hos nordtyske videns institutioner, det ville man nok kunne, hvis det er en specialiseret viden der ikke kan hentes andre steder, så ville man godt kunne det. Men så ville det så være så nogen enkle steder, hvor man siger, ok der er en helt unik kompetence, vi skal have fat i der. Og virksomheds ledet vil slet ikke være med fordi vi ikke med danske skattekroner eller EU-penge til Danmark kunne gå ind og lave nogle understøttende aktiviteter på tyske virksomheder. Så det ville slet ikke finde sted i sammen omfang. Overhovedet ikke. **(III)**	• Now, there are no other cross-border instruments than those originating form INTERREG. Anything beyond this would be restricted to buying single knowledge services at universities in Germany e.g. **(III)**
4.1.6 Comprehensiveness of cross-border elements	• Det er IHK der har lavet en undersøgelse i grænseregionen Sønderjylland-Schleswig-Holstein om hvor mange der samarbejder allerede på krys og tværs af grænsen. Det er der ikke særlig mange der gør. Jeg har en graph du kan få. Og også bagefter blev de spurgt om, ja men kunne du se værdi i at have et ydre	• According to an analysis, made by IHK, not really many companies form the Cleantech industries collaborate currently. But in the same questionnaire, the companies responded that there is a big interest in cooperating. So I argues, that there need to be cross-border instruments that support companies in doing so.

	samarbejde? Og så svarede de så ja. Så der er velvilje. Men jeg tror at der skal være nogle initiativer, nogle instrumenter der skubber på den vej. Fordi hvad kan man sige, kommercielle samarbejder de sker fordi der er forrentningsmæssig fornuft i det. Men dem ... de projekter, der er lidt mere umodne eller hvad kan man sige, lidt længere ned i innovationskæden, de har brug for et skub **(I)**	Thus a higher comprehensiveness of the cross-border policy mix would be helpful **(I)**
4.1.7 Comprehensiveness of cross-border elements	• [About possible future elements] Jeg forestiller mig - og det er bare sådan det ser ud i mit hoved- at man har et stærkt dansk aktør. Det kunne være CLEAN, eksempelvis. Og man har en stærk tysk aktør. Det må de slås om hvem det skulle være. Det jeg jo ikke blande mig i. Ovenpå det har man et eller anden form for meso-klynge aktør. Som er en eller anden imaginær brobygger mellem de her klynger, som er specialiseret i det grænseoverskridende. • [Heiberg] Og hvad ville deres opgave så skulle være? • Det ville være at... hvad skal man sige... prøve og binde landenes initiativer sammen **(I)**	• A possible improvement of comprehensiveness could be reached by two strong cluster actors on each side of the border, and this could be supported by an actual cross-border cluster organisation. However such a step would require a negiotiation processes, and the integrtation of instruments on the German side **(I)**
4.1.8 Comprehensiveness of cross-border elements	• Altså... et, man kunne ændre EU-systemet. Det tror jeg har rimelig lange udsigter. Den nemmeste og den hurtigste vej, tror jeg, var hvis der kom nogle penge bag de regionale strategier mellem regionerne. Og de er enige om at sige, det her grænseoverskridende samarbejde er godt, så vi giver til den danske del og de giver til den tyske del. Men under meget, meget lempeligere administrationsforhold. For det gør at vi kan få virksomhederne med i projekterne og det bliver bare mere konkrete og bedre, hvis vi har virksomhederne med i projektet **(I)**	• As changing the EU-system towards less burocracy is not realistic, a more comprehensive policy mix would need more money behind the regional strategies → that need to highlight the importance of cross-border collaboration and policy coordination, with both sides contributing to the funding of cross-border activities, under much simpler and less administrative conditions, and with a higher degree of companies involved in the projects **(I)**

4.1.9 Comprehensiveness of cross-border elements	• [About other cross-border instruments beyond INTERREG] Altså der er jo Horizon 2020. Den er der også. Den gør sig selv i at den skal være grænseoverskridende men ikke ved nabolandene nødvendigvis. Og der har du ret i, der er der jo INTERREG kun, som har den der nabolande i sig. **(I)**	• Beyond INTERREG instruments there is merely HORIZON 2020 that is also fundet by the EU, but that does not have the explicit cross-border focus but rather an transnational focus **(I)**
4.1.10 Comprehensiveness of cross-border elements	• Horizon 2020 – but as INTERREG same problem: they are both administratively very heavy – takes all very long **(II)**	• HORIZON 2020 is another cross-border instrument (though with a wider geographical focus) but it is even more administratively than INTERREG – so it does not make the cross-border policy mix much more comprehensive **(II)**
4.1.11	• [About the role of INTERREG]Absolutely a good approach (though to administratively heavy) • Maybe the other instruments (cultural exchange, labour market exchange, local cross-border connections) are the key to bring about change of the policy structures eventually • Suggests: regional funds that are easier to access for everybody, more coordination and simplification on the regional level will also open up for more policy integration on the cross-border level. **(II)**	• II believes INTERREG is a good approach, though it is too bureaucratic. He would argue that policy structre integration may only be achieved if the demand for an integrated structre and cooperation is there. To this end in first place, soft instruments like cultural and labour marked exchange need to be strengthened and language skills learened on both sides – then companies will be willing to cooperate more. **(II)**
4.2.1 Comprehensiveness of cross-border processes	• [talking about strategies 8 & 9] Men så nogen ting som tid. Og kan man sige hvorfor skulle det tage ti år? Ja. Det er et godt spørgsmål. Men det kunne i hvert fald ikke gøres på ti år siden. Fordi der var man slet ikke klar til det. **(I)**	• 10 years ago a collaboration agreement like reflected by strategy 8&9 would not have been possible because "one was not ready for this at the time" **(I)**
4.2.2 Comprehensiveness of cross-border processes	• [Heiberg] Synes du at de her grænseoverskridende projekter, at det er få det sådan mere opmærksomhed end det gjorde måske 10 år siden? • Men jeg synes der, det synes jeg sådanset det er vi der blevet mere opmærksom på. Men det handler jo nok	• In RSD, III thinks that the region, particularily in designing regional polcies has started to pay more attention to cross-border instruments and activities, as reflected by their stronger interest in the INTERREG

	også om at vi har drejet det. Altså nu sidder jeg her jo som snæver på erhvervsudviklingsområdet. Og der har vi jo prøvet at påvirke INTERREG programmerne til at i højere grad have en fokus (…) **(III)**	programms and their share of cross-border strategies within the regional strategies **(III)**
4.2.3 Comprehensiveness of cross-border processes	• vi er meget vest-orienteret. Det er mest Jylland, altså den landfaste grænse. Og så har vi jo egentlig Kiel med... vi har jo slet ikke noget fra Lübeck med. • [Heiberg]: Ja. Selvom de er også med i programmet? • Selvom de er også med. Der har vi slet ikke... så det er meget... altså det er det gamle INTERREG program region, du ser også i det her. Og det er jo lidt en svaghed kan man sige. **(I)**	• FCI is very biased towards the SJSW region, while the eastern part of the INTERREG region in Denmark and the Southern part in Germany are not really represented. Policy processes need to be extended to these actors as well! **(I)**
4.2.4 Comprehensiveness of cross-border processes	• [Heiberg]: INTERREG er jo allerede i gang siden... altså det har været der i 25 år og det har jo måske også allerede påvirket.... altså det har jo påvirket jeres strategier frem mod at blive sådan... ja... mere opmærksom på de grænseoverskridende områder. • Ja bestemt, ja bestemt. • [Heiberg]: Det gjorde de også? Det vil du sige. • Ja, ja. **(III)**	• INTERREG may have caused that RSD has started to pay more attention to cross-border policies, thus it has made cross-border policy processes more comprehensive **(III)**