

Regional Diagnosis of Maritime Industry in Schleswig-Holstein, Germany

Delivered for the Interreg Europe Project CLIPPER

Prof. Dr. Peter Franke (Kiel University of Applied Sciences)

Alina Rennekamp (R&D Centre Kiel University of Applied Sciences GmbH)

March 2018

Table of Contents

Introduction	3
1. SMEs' Competitiveness by Improving Industrial Performance	3
1.1. Enterprises' Performance Diagnosis	3
1.1.1. Facts and Figures	4
1.1.2. Maritime Industry Segments and Their Development	6
1.1.3. Integrated SWOT and PEST Analysis for the Maritime Industry in Schleswig-Holstein	10
1.2. Diversification: New Market Opportunities	13
1.3. Services for Strengthening Individual Performance	18
1.3.1. Knowledge, Research, and Innovation	18
1.3.2. Staffing Support and Personnel Training	22
1.4. Summary	23
2. SMEs' Competitiveness by Strengthening Value Chains	25
2.1. Current Value Chains and Future Perspectives	25
2.2. Clusters, Networks, and Associations for Maritime SMEs	27
2.2.1. The Maritime Cluster Northern Germany (MCN)	27
2.2.2. The Schleswig-Holstein Renewable Energy Network Agency	31
2.2.3. windcomm – Offshore Wind Cluster	31
2.2.4. Working Group “Sea - Our Future”	32
2.2.5. Nationwide Maritime Associations and Networks	33
2.3. Supporting Measures for Regional Cooperation and Networking	33
2.3.1. Project Funding	34
2.3.2. Associated Services	34
2.3.2.1. Infrastructure	34
2.3.2.2. Start-Up Support	37
2.3.2.3. Territory Attractiveness Policies	38
2.4. Summary	40
3. SMEs' Competitiveness by Internationalisation	42
3.1. Schleswig-Holstein's Regional Measures for SMEs' Internationalisation	42
3.1.1. Enterprise Europe Network	42
3.1.1.1. Phase 1: 01/01/2015 – 31/12/2016	42
3.1.1.2. Phase 2: 01/01/2017 – 31/12/2018	43
3.1.2. Internationalisation Support by the Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH)	44

3.1.3. Financial Support for SME's Internationalisation	46
3.2. German National Measures for SMEs' Internationalisation	47
3.2.1. Federal Export Credit Guarantees (Hermes)	48
3.2.2. CIRR (Commercial Interest Reference Rate) for Ship Financing	48
3.2.3. Market Development Programme MEP	48
3.2.4. Political Flanking	49
3.2.5. Set of Measures for Strengthening the Competitive Situation of German Enterprises	49
3.3. Summary	50
4. SMEs' Competitiveness by Risk-Sharing	51
4.1. Current Financial Situation of the Maritime Industry	51
4.2. Regional, National, and European Financing Tools	52
4.3. Allocation of the ERDF Funds in Schleswig-Holstein	55
4.4. Opportunities for Increasing Risk-Sharing	58
4.4.1. Adaptation of SME Funding Programmes	59
4.4.2. Loan Securing for Maritime SMEs	60
4.4.3. Alternative Funding Solutions	60
4.5. Summary	61
Conclusion	62
References	63

Introduction

The present regional diagnosis of the maritime industry in Schleswig-Holstein is created in the framework of the Interreg Europe project “CLIPPER – Creating a Leadership for Maritime Industries - New Opportunities in Europe”. This document provides an overview of conditions and developments in the maritime industry in Schleswig-Holstein with a particular focus on SMEs (small and medium-sized enterprises). The analysis presented in this paper is based on an extensive study of relevant political documents, potential assessments, statistical data, and information provided by competent authorities and organisations in the region. This paper is structured according to the four working groups defined within the project CLIPPER.

The regional diagnosis should help the project to develop an action plan for improving public policies in the area of support and funding of maritime SMEs. On the one hand, the results of the diagnosis will be used for the benchmark between the project partners and identification of best practices in the participating regions. On the other hand, it should encourage the discussion and exchange with local stakeholders in order to gain their feedback, determine their needs for action, and prioritise possible improvement suggestions. The information gathered through this work should enable the creation of a well-grounded, relevant, and concrete action plan.

1. SMEs’ Competitiveness by Improving Industrial Performance

The present chapter studies public policies for individual support to SMEs. Its main objective is to provide a detailed overview and a general picture of the industry’s regional peculiarities. Firstly, an enterprises’ performance diagnosis is carried out. It includes some key economic figures and trends of the maritime industry in the federal state of Schleswig-Holstein. Moreover, an integrated SWOT and PEST analysis for the maritime industry is presented here. Secondly, the diversification opportunities are considered by means of a new market opportunities analysis. Finally, the access of maritime SMEs to research and technology as well as qualified personnel is discussed and exemplified. The chapter finishes with a short summary and identification of good practices.

1.1. Enterprises’ Performance Diagnosis

The status-quo analysis of the maritime industry in Schleswig-Holstein in the present paper starts with an overall statistics. In particular, the crucial figures and important facts are provided in the present subchapter. These are followed by a detailed analysis of the maritime industry sectors represented in the federal state including their volume and current development trends and an integrated SWOT and PEST analysis for the whole industry. Based on this information, the market opportunities for future development and diversification are considered further.

1.1.1. Facts and Figures

The maritime industry plays an important role in the economy of Schleswig-Holstein and remains one of its prioritised areas. Moreover, Schleswig-Holstein's maritime companies are important business players not only regionally, but also on the national level. The following figures reflect the maritime industry in Schleswig-Holstein:

- Over 1.800 companies¹ (ca. 1,5% of all Schleswig-Holstein's companies²);
- About 42.000 employees³ (ca. 4,5% of all insurable employments in the region⁴);
- Turnover of about Euro 9,2 billion p.a.⁵ (currently ca. 10% of Schleswig-Holstein's GDP⁶). In 2012, the integrated maritime economy share of Schleswig-Holstein's GDP lied with 13% over the national average in 2012, and the share growth up to 15% of Schleswig-Holstein's GDP is expected in the future.⁷
- Every 4th German shipping company, every 5th German shipyard and Europe's biggest marine national park are located in Schleswig-Holstein.⁸

The importance of the maritime industry for Schleswig-Holstein can be explained not least by the state's location between the Baltic and the Northern Seas and its strategic position in Europe, as shown on Image 1 below. Image 2 shows that the majority of maritime companies in Schleswig-Holstein are situated on the coast, which demonstrated their dependence on the seaways. Cities of Kiel, Lübeck and Flensburg are centres of the industry with the most companies located here. Maritime companies are located in all administrative districts in Schleswig-Holstein. The map shows the main segments of Schleswig-Holstein's maritime industry. These segments will be regarded in detail the next subchapter.

¹ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/M/maritimeWirtschaft.html>.

² Own calculation based on the data of STATISTISCHES AMT (2017), p.7.

³ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/M/maritimeWirtschaft.html>.

⁴ Own calculation based on the data of STATISTISCHES AMT (2017) - II, <https://www.statistik-nord.de/zahlen-fakten/erwerbstaetigkeit-verdienste-arbeitskosten/monatszahlen>.

⁵ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/M/maritimeWirtschaft.html>.

⁶ Own calculation based on the data of STATISTISCHES AMT (2017) - II, <https://www.statistik-nord.de/zahlen-fakten/volkswirtschaft-preise/dokumentenansicht/bruttoinlandsprodukt-in-schleswig-holstein-2016-59442/>.

⁷ DR. HEGENBART & PARTNER (2013), p. 10.

⁸ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/M/maritimeWirtschaft.html>.



Image 1: Strategic Position of Schleswig-Holstein in Europe⁹

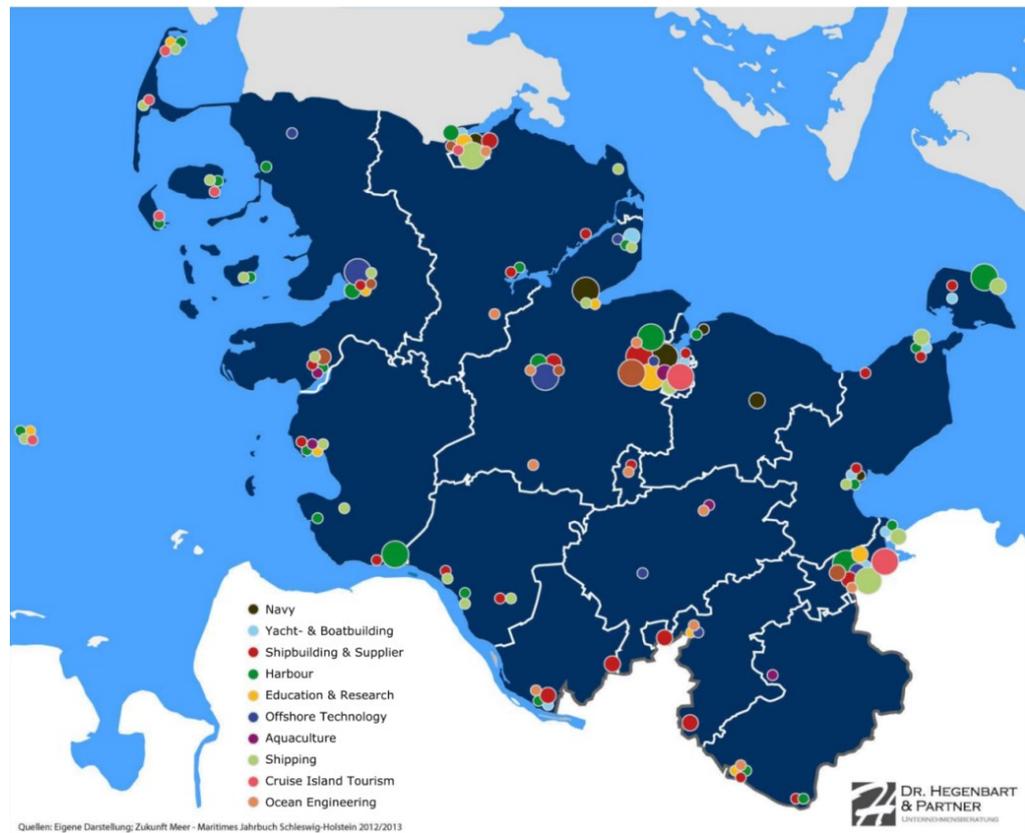


Image 2: Geographical Location of Maritime Industry Enterprises in Schleswig-Holstein¹⁰

⁹ WTSH (2017) - II, p. 6.

¹⁰ Own illustration based on DR. HEGENBART & PARTNER (2013), p. 14.

1.1.2. Maritime Industry Segments and Their Development

According to the Business Development and Technology Transfer Corporation of Schleswig-Holstein (WT.SH), “the core of the industry – in terms of turnover and employment figures – is made up of shipbuilding and its suppliers. But oceanography, deep-sea technology and marine biotechnology are also important cornerstones of the tangible technology transfer between science and industry in Schleswig-Holstein.”¹¹ The further analysis takes the potential study by DR. HEGENBART AND PARTNER (2013)¹² as a basis. As the maritime segments in Schleswig-Holstein are not officially defined and the borders between them are often blurred, the segment names and definitions differ slightly from those of WT.SH. DR. HEGENBART AND PARTNER (2013)¹³ provide the most extensive and reliable data, therefore, their material is used predominantly in the present paper. Table 1 represents the relevant segments of the maritime industry in Schleswig-Holstein as well as their regional characteristics and current trends.

Segment	Turnover 2011, Mio. €	Characteristics/Trends
Maritime navigation	4.000	<ul style="list-style-type: none"> • Strong infrastructure dependence • Growing global trade • Upswing in cruise industry¹⁴
Shipbuilding and offshore supply	2.000 – 2.100	<ul style="list-style-type: none"> • High share of the maritime industry value creation (70%) • Future potential in building of foundation elements and transformer platforms for offshore projects¹⁵
Shipbuilding	1229	<ul style="list-style-type: none"> • Specialisation and focus on high-value products, such as technology- and equipment-intensive special shipbuilding (research ships, cruise ships, mega yachts, ferries, marine ships, offshore ships and equipment) • Growing importance of the capability to offer individual and flexible solutions¹⁶ • Market potential of climate- and environment-friendly shipbuilding products and technologies („Green Shipping“)¹⁷
Maritime tourism	1.000 – 1.100	<ul style="list-style-type: none"> • Important tourism segments in Schleswig-Holstein: sailing and water sports, cruises and ferries, prevention and rehabilitation, island and coastal tourism¹⁸ • Sustainable tourism in the Wadden Sea¹⁹
Offshore wind	350	<ul style="list-style-type: none"> • Sub-sector with the highest market potential in

¹¹ WTSH (2017) - II, p. 8.

¹² DR. HEGENBART & PARTNER (2013).

¹³ Ibid.

¹⁴ DR. HEGENBART & PARTNER (2013), p. 21.

¹⁵ IHK 24 SCHLESWIG-HOLSTEIN (2017),

https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

¹⁶ Ibid.,

https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

¹⁷ BUNDESREGIERUNG (2017), p. 11.

¹⁸ DR. HEGENBART & PARTNER (2013), p. 77.

¹⁹ WIRTSCHAFTSMINISTERIUM (2013), p. 38.

		Schleswig-Holstein ²⁰
Harbours	280 - 300	<ul style="list-style-type: none"> • Particular importance of connections with Baltic states • Primarily transported goods: general cargo • Small harbours are losing their importance²¹
Fish processing and wholesale	260	<ul style="list-style-type: none"> • Good logistic conditions • Newly founded companies experience challenges • Expected demand growth due to globalisation²²
Water building and coastal engineering	190 - 200	<ul style="list-style-type: none"> • Planned transformation from public into private sector²³
Offshore oil, gas, and marine technology	150 - 160	<ul style="list-style-type: none"> • Dynamic growth rates, but low market share in Germany (3% of the German market) • Brilliant perspectives worldwide, strongly growing exploration and development of deep-sea fields²⁴ • High R&D investments; technological intensity and innovation activities are above average²⁵ • German companies are important suppliers, but seldom system providers²⁶
Education and research	120 - 150	<ul style="list-style-type: none"> • Study programmes tailored for the maritime industry • Developed and differentiated scientific and research landscape with leading research institutions²⁷
Fishing	50	<ul style="list-style-type: none"> • Prevaillingly individual enterprises with old equipment²⁸
Yacht- and boatbuilding	35 - 38	<ul style="list-style-type: none"> • 90% of sales are export • Decreasing sales of middle-size yachts due to luxury taxes • Success factors: recovery programmes with location classification, procurement optimisation, development of up-to-date models, preservation of existing federal waterways²⁹
Maritime services	25 - 30	<ul style="list-style-type: none"> • Important segments in Schleswig-Holstein: ship financing, classifications, legal advice, associations, clusters, working circles³⁰ • Growing knowledge intensity³¹
Aquaculture	Ca. 20	<ul style="list-style-type: none"> • Prevaillingly molluscs production • The most quickly growing food producing segment worldwide • Trend of sustainable production of fish and shellfish³²

Table 1: Key Segments of Schleswig-Holstein's Maritime Industry³³

²⁰ DR. HEGENBART & PARTNER (2013), p. 37.

²¹ Ibid., p. 47.

²² Ibid., p. 57 f.

²³ Ibid., p. 69.

²⁴ PROGNOSES (2014), p. 68.

²⁵ BMWi (2011), p. 5ff.

²⁶ Ibid., p. 5 ff.

²⁷ DR. HEGENBART & PARTNER (2013), p. 72 f.

²⁸ Ibid., p. 52.

²⁹ Ibid., p. 64 ff.

³⁰ Ibid., p. 82.

³¹ IHK 24 SCHLESWIG-HOLSTEIN (2017),

https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

³² DR. HEGENBART & PARTNER (2013), p. 60 f.

³³ The table is based on the structure and figures provided by DR. HEGENBART & PARTNER (2013), p. 15.

Besides, the Maritime Cluster Northern Germany (MCN) has identified several trends applying to the maritime industry in general, which, logically, have an impact on all maritime segments in Schleswig-Holstein as well:

- Increased ship energy efficiency demand;
- E-navigation, meaning electronic maritime data collection and exchange on board and on land;
- Extended robotic application;
- Industry 4.0 – changing production processes;
- Growing financial difficulties in shipbuilding and buying;
- Stringent environmental regulations;
- International trade growth through globalisation;
- Growing competition with transition countries in all maritime sub-sectors;
- Growing market for offshore maintenance service;
- Growing demand for system solutions;
- Decreasing workforce availability and personnel education quality.³⁴

In summary, the analysis shows that ca. 84% of all Schleswig-Holstein's maritime industry sales are made by four segments: maritime navigation (ca. 40%), shipbuilding and offshore supply (ca. 21%), shipbuilding (ca. 12%), maritime tourism (ca. 11%). The other ten minor segments share the remaining 16%. Image 3 provides a visualisation of these figures.

³⁴ MCN (2015), pp. 33 f.

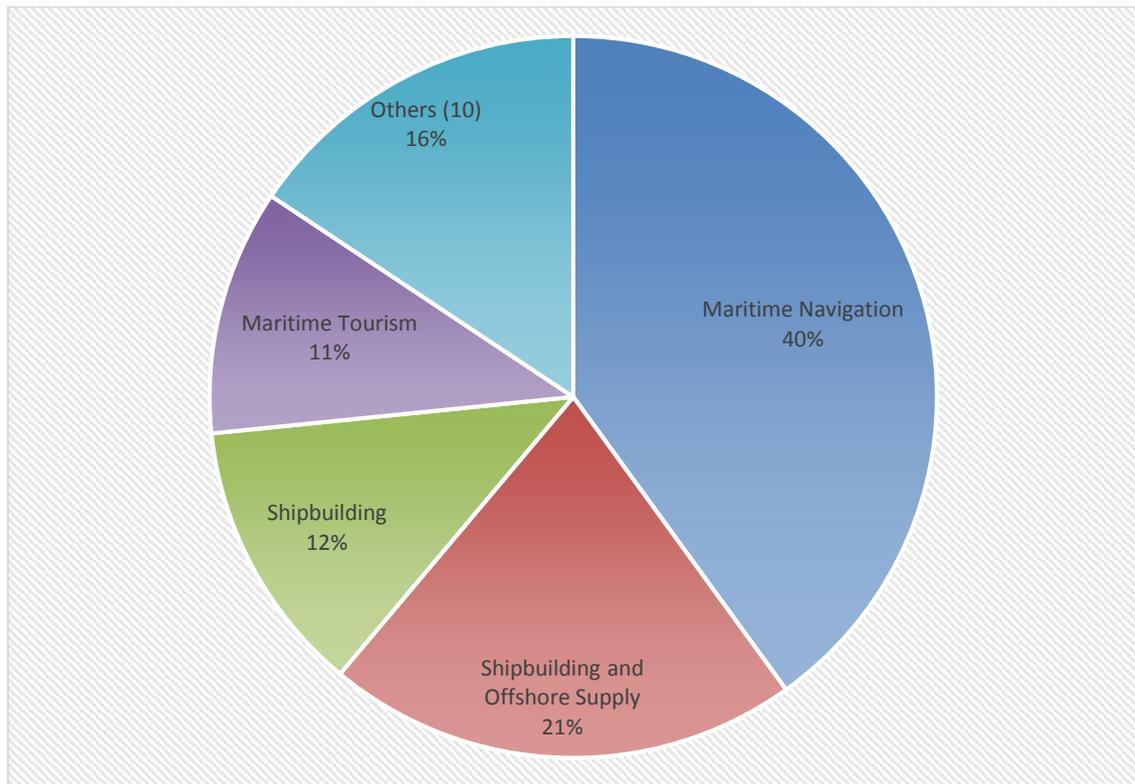


Image 3: Segments of Maritime Industry According to Turnover Share in Schleswig-Holstein

Further, the estimated potential of the above named segments has been analysed. According to DR. HEGENBART AND PARTNER (2013)³⁵ and the Chamber of Industries and Commerce Schleswig-Holstein,³⁶ some segments will become more important. For instance, shipbuilding and offshore supply has a high potential through the growing importance of offshore projects and green shipping solutions.³⁷ The same applies to shipbuilding itself. Building of basic elements and transformer platforms for offshore projects, retrofitted conversion, Liquid Natural Gas (LNG), and especially special shipbuilding are expected to be the most relevant topics in the future.³⁸ Besides, three of the segments with relatively low sales today are expected to gain importance and increase in future: offshore wind, marine technology, and aquaculture. According to DR. HEGENBART AND PARTNER (2013), offshore wind represents “the highest economic potential of the next years”,³⁹ and aquaculture is “the most quickly growing food production sector in the world”⁴⁰. And the Chamber of Industries and Commerce Schleswig-Holstein states the worldwide chances of marine technology are rated as excellent.⁴¹ Image 4

³⁵ DR. HEGENBART & PARTNER (2013).

³⁶ IHK 24 SCHLESWIG-HOLSTEIN (2017), <https://www.ihk-schleswig-holstein.de>.

³⁷ DR. HEGENBART & PARTNER (2013), p. 31.

³⁸ Ibid p. 26 and IHK 24 SCHLESWIG-HOLSTEIN (2017), https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

³⁹ Own translation, DR. HEGENBART & PARTNER (2013), p. 37.

⁴⁰ Own translation, Ibid., p. 61.

⁴¹ IHK 24 SCHLESWIG-HOLSTEIN (2017),

represents the development perspectives of maritime industry segments in Schleswig-Holstein. The segments with high estimated potential are highlighted blue.

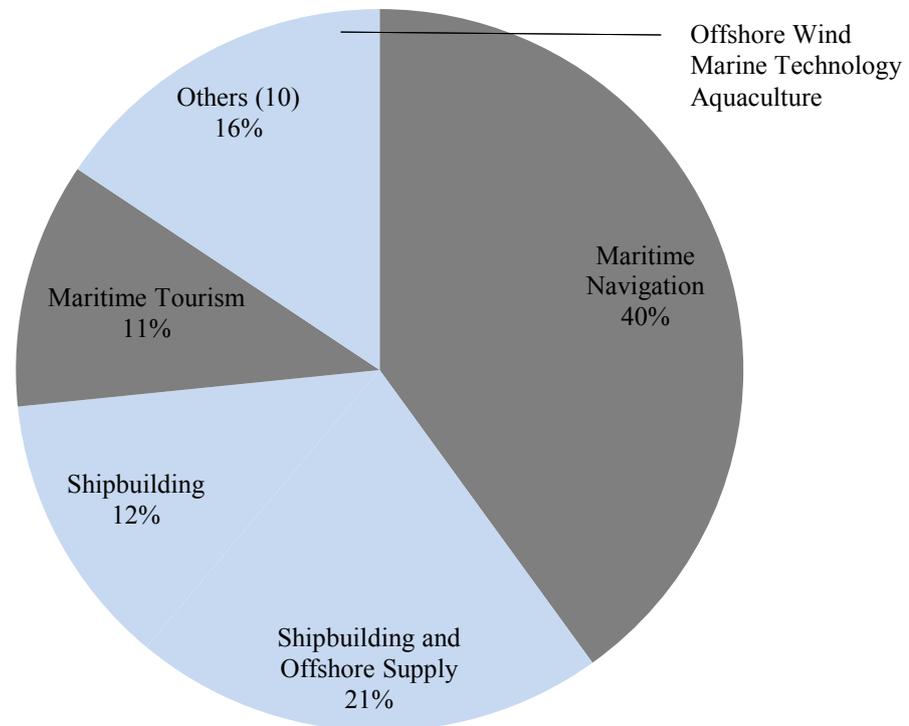


Image 4: Segments with High Estimated Potential and Current Shares of the Maritime Industry Sales in Schleswig-Holstein

1.1.3. Integrated SWOT and PEST Analysis for the Maritime Industry in Schleswig-Holstein

This sub-chapter summarises the strengths, weaknesses, opportunities, and threats of Schleswig-Holstein's maritime industry in the political, economic, social, and technological levels. The information provided here is based on the analysis of the main studies on this topic and should provide a detailed overview of the regional maritime industry.

Strengths

[P] Beneficial strategic position in Europe

[E] Good reputation of the German maritime industry due to its qualitatively valuable and innovative products

[E] Highly specialised, flexible and dynamic SMEs

[E] Strong international orientation of the German maritime industry

[E] Partially good networking of maritime actors within and along value chains

https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

[E] High service competence and strong customer orientation

[S] High education and training level

[S] Qualified personnel

[T] Generally high technologic expertise

[T] Good R&D activities and well-established research institutions

[T] Developed and differentiated scientific and research landscape with leading research institutions⁴²

Weaknesses

[P] Lacks in the maritime logistic infrastructure in Northern Germany

[P] Insufficient political course setting and support for the maritime industry

[E] The cooperation thought is in general not well established yet

[E] Difficult financial situation and insufficient financing opportunities for maritime companies⁴³, insufficient investments, insufficient SMEs' financial power⁴⁴

[E] Delays in offshore wind development

[E] Difficult situation of German shipyards

[E] German products and services continue to be too expensive on the international market

[E] Insufficient international marketing strategies

[E] Lacking national "main actors"

[S] Lack of specialists

[T] Insufficient system integration⁴⁵, lacking system providers⁴⁶

Opportunities

[P] Competitiveness growth through improved infrastructure

[P] Growth through ongoing globalisation

[P] Growing demand for new environmentally friendly technologies⁴⁷ due to environmental regulations⁴⁸

⁴² MCN (2015), p. 40.

⁴³ MCN (2015), p. 40.

⁴⁴ DR. HEGENBART & PARTNER (2013), p. 43.

⁴⁵ MCN (2015), p. 40.

⁴⁶ DR. HEGENBART & PARTNER (2013), p. 43.

[E] Development of strategic partnerships between companies of the same and different economic segments

[E] Strengthened interdisciplinary approach to increase German competitiveness

[E] Using international marketing potential⁴⁹

[E] Growing demand for marine technology

[E] Securing energy and resources⁵⁰

[T] Development of new maritime technologies

[T] Sustainable usage of seas for the energy winning

[T] Using technological potential for the development of special shipbuilding

[T] Intensive cooperation between science and SMEs,⁵¹ networking of experts⁵²

Threats

[P] Growing bureaucratic complexity and, therefore, flexibility loss

[P] Missing infrastructure improvement and expansion

[P] Deteriorating political framework conditions

[E] Too low investment capital

[E] Unused potentials through poor cooperativeness⁵³

[E] Market foreclosure

[E] International competition

[E] High specialization

[E] Distortion of competition⁵⁴

[S] Growing lack of specialists

[S] Falling education quality level

[T] Loosing technologic leadership

⁴⁷ MCN (2015), p. 40.

⁴⁸ DR. HEGENBART & PARTNER (2013), p. 43.

⁴⁹ MCN (2015), p. 40.

⁵⁰ DR. HEGENBART & PARTNER (2013), p. 43.

⁵¹ MCN (2015), p. 40.

⁵² DR. HEGENBART & PARTNER (2013), p. 43.

⁵³ MCN (2015), p. 40.

⁵⁴ DR. HEGENBART & PARTNER (2013), p. 43.

[T] Loosing competitiveness through decreasing innovation capacity

[T] Growing loss of expertise⁵⁵

1.2. Diversification: New Market Opportunities

In the course of the analysis of market segments, trends, opportunities and risks described above, three main diversification fields have been identified as most promising in this paper. As explained above, these fields are repeatedly mentioned as highly promising by the studies and reports. The findings are supported by respective official documents, which are quoted below. The market opportunities in question are closely connected with the strategy of diversification, namely penetrating new promising markets and expanding the offer there:

1. **Offshore projects:** The sub-sector offshore wind is a quickly growing and seminal one with an expected market volume of EURO 140 billion. Some Northern German shipyards, such as Nobiskrug, are already trying to gain a foothold in this area.⁵⁶

2. **Climate- and environment-friendly shipbuilding products and technologies** („Green Shipping“): these include products and technologies help to reduce emissions, spare energy and other resources, lower operating costs, and meet the stringent environmental regulations (e.g. alternative fuels, Liquid Natural Gas, energy saving devices, retrofitting conversion etc.)⁵⁷

3. **New technology development** (“Smart Shipping”). Building on international technology leadership of Northern Germany maritime companies, the future potential lies in the development of new maritime technologies and automatised systems, particularly in fields of digitalisation, robotic, and e-navigation).⁵⁸

Image 5 demonstrates the three diversification opportunities with possible products and services relating to them. The products and services were found in cited documents and summarised in this representation.

⁵⁵ MCN (2015), p. 40.

⁵⁶ IHK 24 SCHLESWIG-HOLSTEIN (2017),

https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

⁵⁷ BUNDESREGIERUNG (2017), p. 11; FORSCHUNGSZENTRUM JÜLICH (2016), p. 63.

⁵⁸ MCN (2015), p. 33; FORSCHUNGSZENTRUM JÜLICH (2016), pp. 48 f.

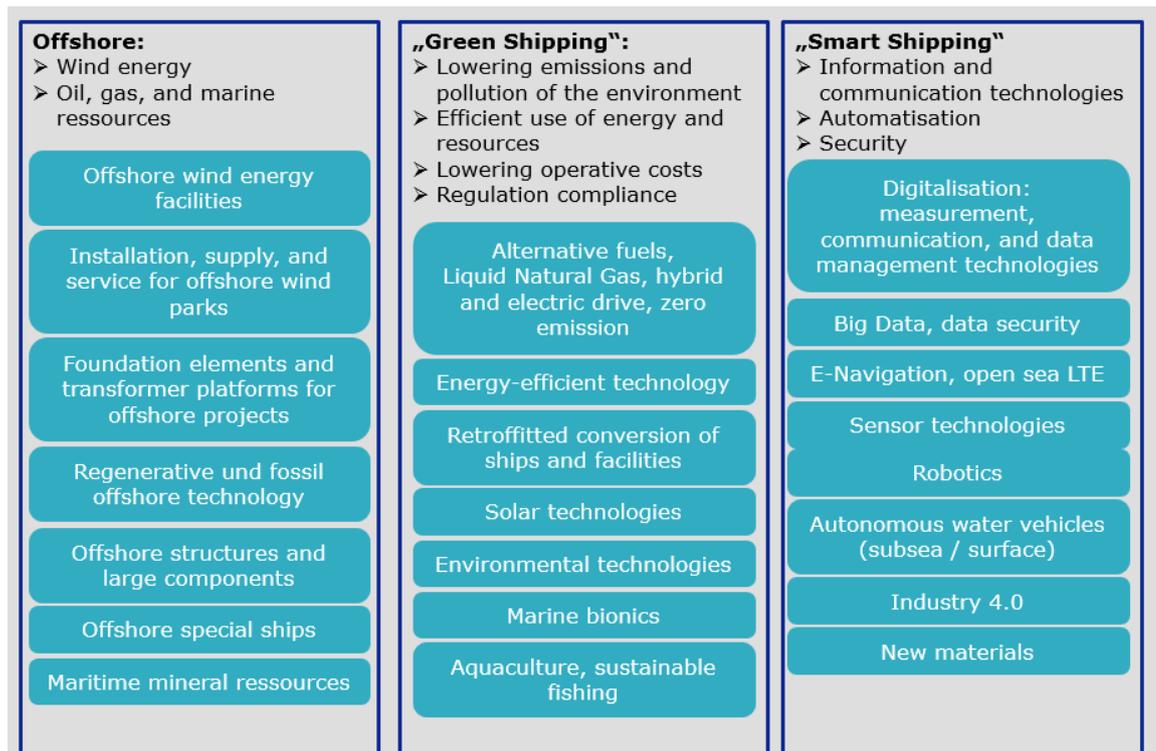


Image 4: New Market Opportunities for Maritime Companies⁵⁹

The high potential of these market opportunities can be proved by the analysis of R&D projects funded by the German government. Table 2 contains all R&D projects of the maritime industry in Schleswig-Holstein (date: 20.12.2017), which started not earlier than 2014 and are/were funded by the German government. All of these projects are joint ones and include partners from different German regions. The subsidy amount in Table 2 refers to the partner company in Schleswig-Holstein, not the whole project subsidy. The topical reference is estimated subjectively in this paper based on the provided project descriptions.

Company	Project	Topical Reference	Project Time	Subsidy Amount
NORDSEE-TAUCHER GmbH	Foulprotect – anti-fouling and bio-corrosion prevention in the marine technology; Specific measure: validation of cleaning methods for reduction of fouling development wall friction on offshore ships and large components	Marine bionics (Regenerative and fossil offshore technologies)	01.07.2014 – 31.12.2017	104.968€
GISMA Steckverbinder GmbH	MPNet – maritime multi-phase transport networks conveyor technology for a needs-based transport of MP mixtures; Specific	Offshore structures and large components	01.06.2014 – 30.09.2017	86.233€

⁵⁹ Based on the thematic research in DR. HEGENBART & PARTNER (2013), pp. 10 ff., ⁵⁹ IHK 24 SCHLESWIG-HOLSTEIN (2017), https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546, BUNDESREGIERUNG (2017), p. 11; FORSCHUNGSZENTRUM JÜLICH (2016), pp. 48ff., MCN (2015), p. 33 ff.

	measure: R&D of highly durable, compact hybrid plug connectors for the MDA subsea, off-, and onshore operation			
Flensburger Schiffbau-Gesellschaft m.b.H.& Co. Kommanditgesellschaft	MethaShip - methanol (MeOH) as basic fuel for middle- and fast-speed ship engines in the passenger shipping; Specific measure: development and safety technology analysis of a methanol-driven ro-ro passenger ferry	Alternative fuels	01.09.2014 – 28.02.2018	237.300€
Raytheon Anschütz GmbH	MaRe SX – maritime radar with electronic beam scanning in the S- and X-band; Specific measure: digital radar signal processing, algorithms, and user software	E-navigation (Sensor technologies)	01.11.2014 – 31.08.2018	614.277€
Kongsberg Maritime Contros GmbH	SUGAR_III_A – Strategies and technologies for extraction of natural gas from methane hydrate deposits, TP4: technologies and strategies for the environmental monitoring; Specific measure: environmental monitoring system COUBS	Regenerative and fossil offshore technologies (Liquid Natural Gas)	01.10.2014 – 31.03.2018	921.508€
Kongsberg Maritime Contros GmbH	SUGAR_III_A – Strategies and technologies for extraction of natural gas from methane hydrate deposits, TP4: technologies and strategies for the environmental monitoring; Specific measure: sonar-based underwater detection of gas bubbles - SOUNDING	Regenerative and fossil offshore technologies (Liquid Natural Gas)	01.10.2014 – 31.03.2018	397.857€
Wärtsilä ELAC Nautik GmbH	SUGAR_III_A – Strategies and technologies for extraction of natural gas from methane hydrate deposits, TP4: technologies and strategies for the environmental monitoring; Specific measure: ship-based environment monitoring of gas leakages with multi-beam echo sounders - SUMON	Regenerative and fossil offshore technologies (Liquid Natural Gas)	01.10.2014 – 31.03.2018	382.488€
Flensburger Schiffbau-Gesellschaft m.b.H.& Co. Kommanditgesellschaft	HYKOPS – development of a framework for hydrodynamic component design for innovative manoeuvring and propulsion systems, Specific measure: framework development and integration in a design environment	-	01.03.2016 – 28.02.2019	237.119€
Raytheon Anschütz GmbH	MTCAS – electronic maritime collision prevention; Special measure: integrated bridge system for ship crew support in collision situations	E-navigation (Sensor technologies)	01.01.2016 – 31.12.2018	471.022€
Flensburger Schiffbau-Gesellschaft m.b.H.& Co. Kommandit-	MOPS –method bank system for offshore and polar systems; Specific measure: hydrodynamic methods for offshore and polar ships and systems	Offshore special ships (Sensor technologies)	01.03.2016 – 28.02.2019	199.236€

gesellschaft				
Raytheon Anschütz GmbH	SiNafa – secure maritime navigation; Special measure: multi-hypothesis optimal filter for the robust and fault-tolerant hybrid sensor data fusion	Open sea LTE (Sensor technologies)	01.03.2016 – 28.02.2018	361.050€
SubCtech GmbH	ISSA – intelligent and secure deep-sea propulsion technology; Special measure: intelligent and secure deep-sea battery	-	01.09.2016 – 31.08.2019	673.238€
Caterpillar Motoren GmbH & Co. KG	eta-up – increase of the overall utilisation ration and reduction of the friction losses for the middle-speed diesel ship engine; Special measure: optimisation of the application-specific distribution of energy flows of the middle-speed large engine	-	01.09.2016 – 31.08.2019	351.846€
KNIERIM Yachtbau GmbH	AERONAUT – aerodynamic design of superstructures with retrofittable attachments; Special measure: design and production technologies for retrofittable aerodynamic attachments AERONAUT - K	-	01.10.2016 – 30.09.2019	172.284€
ThyssenKrupp Marine Systems GmbH	MUM – development of an innovative marine technology system solution for autonomous underwater works; Special measure: complete conception and development of ship technology systems - Power MUM	Autonomous underwater vehicles	01.04.2017 – 31.03.2020	1.105.343€
ThyssenKrupp Marine Systems GmbH	HiOcav – improved prognosis of the higher rank pressure fluctuations caused by the interaction between cloud and tip vortex cavitation; Special measure: analysis of large-scale cavitation processes and numeric simulation of the cavitation processes at the propeller blade tip	-	01.06.2017 – 31.05.2020	342.345€
Otto Piening Schiffspropeller und Wellenanlagen GmbH	HiOcav – improved prognosis of the higher rank pressure fluctuations caused by the interaction between cloud and tip vortex cavitation; Special measure: improved numeric prognosis of the cavitation phenomena at the propeller and realisation in the propeller design	-	01.06.2017 – 31.05.2020	223.426€
MacGregor Germany GmbH & Co. KG	WASSER – maintenance and service of ships with augmented reality; Special measure: equipment (WASSER-A)	Digitalisation (Industry 4.0)	01.07.2017 – 30.06.2020	205.304€
MacGregor Germany GmbH & Co. KG	FernSAMS – Use of remote-controlled tugs for cast-off and driving manoeuvres of big ships; Special measure: rope back-panel	Robotics	01.09.2017 – 31.08.2020	440.244€

	system			
Raytheon Anschütz GmbH	ACTRESS - architecture and technology development platform for real-time safe and secure systems, special measure: integrated security architectures	-	01.09.2017 – 31.08.2020	514.720€
Sum total				8.041.808€

Table 2: Maritime Projects in Schleswig-Holstein since 2014 Funded by the German Government⁶⁰

As it can be summarised from Table 2, the German government invested 8.041.808€ in maritime research projects in Schleswig-Holstein since 2014 till 2017. Primarily offshore-related projects made about 29% of the sum total, „Green Shipping“ received 4% of the funding, and 35% were destined for projects connected with „Smart Shipping“ topics. Thus, about 68% of the funding was invested in the new market opportunities explained above in the present chapter. The graphic representation of these numbers is provided on Image 5.

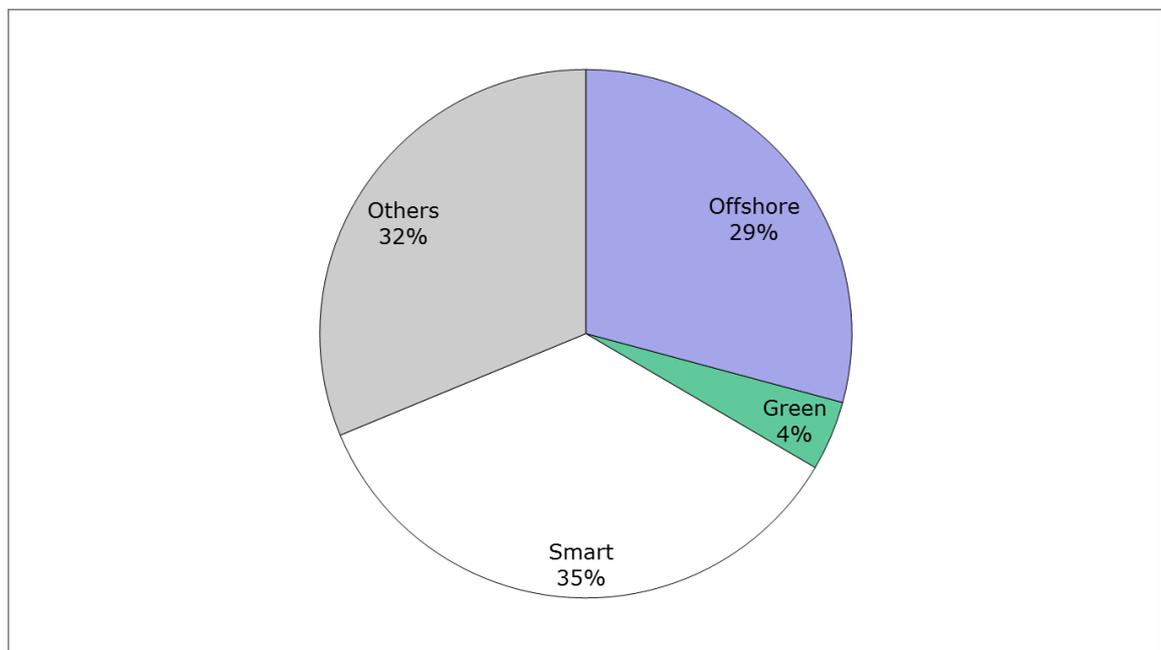


Image 5: Allocation of the German Government's Funds on Maritime Projects in Schleswig-Holstein in 2014-2017 According to Topics

The poor representation of “Green Shipping” is connected to its partial interrelation with Offshore topics. For example, the project SUGAR_III_A has been attributed to “Offshore” in Table 2, but it is also relevant for “Green Shipping” as it deals with Liquid Natural Gas extraction on offshore platforms. Double assignment, however, was avoided to correctly estimate the investment percentage. Therefore, the results demonstrate that the three market

⁶⁰ Own representation of the data from BMBF (2017): <https://foerderportal.bund.de/foekat/jsp/SucheAction.do>. Topical reference is estimated subjectively.

opportunities described above have been acknowledged by the German government as well and offer promising opportunities for the maritime industry.

1.3. Services for Strengthening Individual Performance

In order to strengthen SMEs' individual performance and provide a suitable framework for further development, Schleswig-Holstein offers some services supporting companies in their R&D activities and staff recruitment. The present sub-chapter describes the main offers in these areas for maritime industries.

1.3.1. Knowledge, Research, and Innovation

A remarkable knowledge and technology orientation is particularly important in Schleswig-Holstein. Many sub-sectors either belong to high-tech industries (e.g. innovative shipbuilding) or have a high R&D potential (e.g. marine technology). Besides, the maritime industry in Schleswig-Holstein is strongly supported by a developed and well-differentiated science and research landscape.⁶¹

The following universities offer teaching and research in maritime subjects:

- Kiel University of Applied Sciences
- Flensburg University of Applied Sciences
- Lübeck University of Applied Sciences
- Kiel Christian-Albrechts-University (CAU)

Besides, several research centers in Schleswig-Holstein specialise on research in particular maritime areas and possess the necessary equipment and laboratories:

- The R&D Centre Kiel University of Applied Sciences GmbH is an independent, profit-oriented organisation. It states:
“We have the full potential of a university of applied sciences and the combined knowledge of over 150 academic staff at our disposal to support you, with tailor-made solutions, on your path to economic success. [...] At FuE-Zentrum FH Kiel GmbH, we consider ourselves a link between science and industry. The tasks assigned to us by our clients result in concrete and economically viable solutions.”⁶² “Taking a project-oriented approach, FuE-Zentrum FH Kiel GmbH tackles scientific challenges in any industry – from consultation through to project management. The scope of services will be defined in a project agreement and it goes without saying that clients will own the

⁶¹ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/M/maritimeWirtschaft.html>.

⁶² FUE-ZENTRUM FH KIEL GMBH (2017), <https://www.fh-kiel-gmbh.de/en/>.

results of the research. This enables clients to access an enormous knowledge pool that guarantees solutions of practical relevance, thus providing a swift return on investment at an affordable price.”⁶³

- The GEOMAR - Helmholtz Centre for Ocean Research Kiel (GEOMAR) is a publicly funded non-profit, research organisation in Kiel. At its webpage, it states:

“GEOMAR Helmholtz Centre for Ocean Research Kiel is one of the world’s leading institutes in the field of marine sciences. The institute investigates the chemical, physical, biological and geological processes of the seafloor, oceans and ocean margins and their interactions with the atmosphere. With this broad spectrum, GEOMAR is unique in Germany. Additionally, the centre has successfully bridged the gap between basic and applied science in a number of research areas. The GEOMAR is a foundation under public law jointly funded by the federal (90 %) and state (10 %) government. GEOMAR has a staff of 1,000 (status on 31 March 2017) and a yearly budget of around 75 Mio. Euro.”⁶⁴

“To safeguard and boost innovation activities and thus maintain the competitiveness of the increasingly science-based German national economy, it is crucial to facilitate an efficient cooperation between scientific institutions and commercial enterprises.

As a site of cutting-edge research, GEOMAR has a high innovative potential. GEOMAR technology transfer addresses the tasks of identifying potential pieces of innovation, securing them and accompanying commercial application. We serve as a central point of contact for science as well as industry. Industry partners will be supported in getting access to the latest scientific results.

We offer

- advice concerning funding programmes
 - assistance in finding partners and initiating projects for cooperation
 - technology marketing
 - support in securing intellectual property and
 - support in the search for license partners”⁶⁵
- The Alfred Wegener Institute for Polar and Marine Research on the islands of Sylt and Helgoland with the following information provided on its webpage: “As an internationally respected centre of expertise on polar and marine research, the Alfred Wegener Institute is one of the very few scientific institutions in the world that are equally active in the Arctic and Antarctic. It coordinates German polar research efforts,

⁶³ Ibid., <https://www.fh-kiel-gmbh.de/en/services.html>.

⁶⁴ GEOMAR (2017), <https://www.geomar.de/en/>.

⁶⁵ Ibid., <https://www.geomar.de/en/centre/technology-transfer/>.

while also conducting research in the North Sea and adjacent coastal regions in Germany. Combining innovative approaches, outstanding research infrastructure and years of expertise, the Alfred Wegener Institute explores nearly all aspects of the Earth system – from the atmosphere to the ocean floor. In this regard, initiatives to better grasp the climate-related processes on our planet have increasingly taken centre stage.”⁶⁶ “Technology transfer processes and activities include identification, protection and exploitation of inventions and innovative ideas arising from the AWI as well as the acquisition and implementation of contract research and industry co-operations.”⁶⁷

- The Helmholtz Zentrum Geesthacht - Centre for Materials and the Coastal Research is a non-profit research institute funded by the Federal Republic of Germany, several federal states and a number of companies.⁶⁸ The centre works in the areas of high-performance materials for the cars and aircraft, new materials for the field of medicine, research on future climate change, and management of the coastal and marine environment.⁶⁹
- Research and Technology Centre, West Coast, Büsum is a central facility of Kiel Christian-Albrechts-University. According to the official page of the Centre, “It pursues interdisciplinary coastal research mainly in shallow water areas and estuaries.

Emphasis is placed on applied research in coastal environments along the German North and Baltic Sea. The results are translated into concepts and strategies for sustainable coastal management both in Germany and abroad. These, in turn, serve as the basis for numerous environmental, structural and socio-economic policies in the regional, national and international realm.

Due to the high percentage of external funding (more than the actual budget) the research centre contributes extensively to the development of the region.

Focus is given to the improvement of the understanding and predictions of hydrodynamics, sediment dynamics and morphodynamics covering a wide range of spatial and temporal scales, assessment of the effect of coastal structures and their interaction with marine mammals and birds, eutrophication and environmental sustainability. Particular attention is paid to monitoring strategies and the development of information systems for the management of coastal areas.

The results obtained contribute to the integrated management of coastal environments.”⁷⁰

⁶⁶ AWI (2017), <https://www.awi.de/en/about-us/organisation/profile.html>.

⁶⁷ Ibid., <https://www.awi.de/en/science/technology-transfer/technology-transfer-from-research-to-commercial-application.html>.

⁶⁸ HELMHOLTZ-ZENTRUM (2017), https://www.hzg.de/about_us/organisation/index.php.en.

⁶⁹ Ibid., https://www.hzg.de/about_us/overview/index.php.en#tab-9.

⁷⁰ FTZ (2017), <http://www.ftz.uni-kiel.de/en/about-us>.

- FINO research platforms FINO (FINO 1, 2, 3): these research facilities were erected in the North Sea and the Baltic Sea to conduct research and development projects in offshore wind power generation.⁷¹ The FINO page says: “Scientific studies conducted on these platforms include the following:
 - Measurement of wind strength, wind direction and turbulence in relation to height;
 - Measurement of wave height and wave propagation;
 - Measurement of the strength of sea currents;
 - Seabed subsurface conditions;
 - Lightning measurements.

Results obtained intend to contribute to the clarification of outstanding uncertainties concerning the technical design of installations, and fill any gap in our knowledge of the biotope in the zones concerned including any associated effects resulting from the construction of offshore wind farms.”⁷²

The map on Image 6 reflects the positioning of the three platforms.



Image 6: Fino 1, 2, 3⁷³

Furthermore, several competence centres in the maritime area are active in Schleswig-Holstein. These institutions often evolve out of projects and bundle expertise and competence in strictly defined, narrow knowledge areas. SMEs usually do not profit from competence centres directly, but their knowledge and networking activities exert a positive influence on the regional

⁷¹ FINO (2017), <http://www.fino-offshore.de/en/>.

⁷² Ibid., <http://www.fino-offshore.de/en/>.

⁷³ Ibid. <http://www.fino-offshore.de/en/>.

maritime industry in general. In Schleswig-Holstein, following competence centres are currently active:

- National Competence Centre Marine Aquaculture Phase III: project of Kiel Christian-Albrechts-University including national and international networking, promoting establishing of aquaculture companies in the region, development of environmentally friendly aquaculture systems, building research cooperations.⁷⁴
- GEOMAR-Biotech (GEOMAR Centre for Marine Biotechnology): part of the GEOMAR Marine Natural Product Chemistry research unit transferring the marine biotechnology research results into application.⁷⁵
- Renewable Energies and Climate Protection Competence Centre Schleswig-Holstein (EEK.SH): project of the R&D Centre Kiel University of Applied Sciences GmbH, university contact point for all renewable energy related issues.⁷⁶

The Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) also aims at strengthening companies through innovation and research and offers support in these areas through innovation consulting. “The innovation consulting focus in the work of developing existing businesses involves showing companies what starting points and implementation possibilities exist for innovative projects, and then supporting their implementation. In this context, the advice on industrial property rights and assistance provided in setting up collaboration agreements between companies and between academic institutions and companies (technology scouting) are of particular significance. WTSH’s function as the central funding consulting agency for the state’s innovation-oriented funding programmes is hugely important.”⁷⁷

Thus, Schleswig-Holstein provides a broad network of academic competencies and research facilities for the maritime industry. This is a pre-requisite for successful innovation and development in SMEs and one of the region’s main strengths.

1.3.2. Staffing Support and Personnel Training

As the SWOT and PEST analysis above has shown, Schleswig-Holstein’s maritime industry enjoys high education standard and qualified personnel not least because of its education and research institutions. However, it is becoming more and more difficult to attract and retain highly qualified employees in the region. According to the WTSH Business Development and Technology Transfer Corporation of Schleswig-Holstein GmbH, “training and retaining skilled

⁷⁴ GMA (2017), <http://www.gma-buesum.de/projekte/aktuelle-projekte/nationales-kompetenzzentrum-marine-aquakultur-phase-iii.html>.

⁷⁵ GEOMAR (2017), <https://www.geomar.de/en/research/fb3/fb3-mn/geomar-biotech>.

⁷⁶ EEK.SH (2017), <http://www.eek-sh.de>.

⁷⁷ WTSH (2017), <https://wtsh.de/media/?lang=en>.

workers are important factors for the economy. In the Schleswig-Holstein specialist initiative FI.SH, business, politics, science, municipalities and trade unions work together to ensure permanent security of highly-skilled workers. This is done by

- improving the transition of young people from school to higher education and work,
- increasing the attractiveness and quality of the dual education system,
- promoting targeted cooperation between universities and businesses,
- increasing the participation of women, and
- creating a welcoming culture, together with acquiring external specialists.⁷⁸

Schleswig-Holstein employs and funds several measures promoting maritime careers and job opportunities. Some of them include:

- Maritime Competence Centre for Basic, Further and Advanced Training: “vocational basic, further and advanced training in and services for maritime trades in Travemünde - the Seemannschule (Marine School) is a partner.”⁷⁹
- Project Sailing Pupils Schleswig-Holstein with the goal of “introduction of as many pupils as possible to sailing.”⁸⁰
- Promotion of further training: “the Land Government promotes the further training infrastructure (vocational training centres, information and consultation, the Kursportal (course portal) further training database, and participation in further vocational training (Schleswig-Holstein further training bonus, student grants for master courses, training leave), making it easier for apprentices, employees and businesses to access further training and advanced further training.”⁸¹

Thus, there are several initiatives to prevent SMEs from the threatening lack of specialists, but still much more can be done in this respect.

1.4. Summary

The analysis in the present chapter has shown that the maritime industry plays crucial role in the regional economy in Schleswig-Holstein. In particular, the segments maritime navigation, shipbuilding and offshore supply, shipbuilding, and maritime tourism make ca. 84% of the current region’s maritime industry turnover, and offshore wind, marine technology, and aquaculture are quickly growing in importance. Although maritime companies have some clear advantages in Schleswig-Holstein, forward-looking and careful politics are necessary to

⁷⁸ WTSH (2017) -II, p. 14.

⁷⁹ WIRTSCHAFTSMINISTERIUM (2013), p. 88.

⁸⁰ Ibid.

⁸¹ Ibid.

minimise potential risks and support growth in the future. Especially, the topics Offshore, Green Shipping, and Smart Shipping offer room for diversification and smart specialisation for individual companies. Many companies have already realised it and invest in new initiatives in these areas, which are supported and funded by the German federal government. The federal state Schleswig-Holstein offers a highly developed and differentiated research and development landscape as well as some initial staff training and talent acquisition support to help SMEs improve their individual performance. The good practices for SMEs' industrial performance in Schleswig-Holstein discussed in this chapter are gathered in Table 3.

<p>Good Practices – Improving Industrial Performance</p>	<ul style="list-style-type: none"> • The R&D Centre Kiel University of Applied Sciences GmbH • The GEOMAR - Helmholtz Centre for Ocean Research Kiel (GEOMAR) • The Alfred Wegener Institute for Polar and Marine Research on the islands of Sylt and Helgoland • The Helmholtz Zentrum Geesthacht - Centre for Materials and the Coastal Research • Research and Technology Centre, West Coast, Büsum • FINO research platforms • National Competence Centre Marine Aquaculture Phase III • GEOMAR-Biotech (GEOMAR Centre for Marine Biotechnology) • Renewable Energies and Climate Protection Competence Centre Schleswig-Holstein (EEK.SH) • The Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) - innovation consulting • Specialist initiative FI.SH • Maritime Competence Centre for Basic, Further and Advanced Training • Project Sailing Pupils Schleswig-Holstein
---	---

Table 3: Summary of Good Practices for Improving Industrial Performance in Schleswig-Holstein

2. SMEs' Competitiveness by Strengthening Value Chains

The present chapter analyses public policies supporting projects addressed to grouping bodies (such as SME networks or clusters). First, the current situation of value chains and cooperation in Schleswig-Holstein is described and outlooks for future development are provided. Second, the existing cluster activities and associations targeted at maritime SMEs are presented. Finally, other indirect options of supporting regional cooperation and networking provided by the federal state are studied. They include project funding and associated services. A summary of the results concludes the chapter.

2.1. Current Value Chains and Future Perspectives

Close cooperation along the value chain between shipyards, suppliers, and service companies is an important success factor for the future prospects of the maritime industry as such division of labour between companies leads to more efficient production processes and enables exploitation of specific location advantages.⁸² Back in 2013, a potential analysis of maritime industry in Schleswig-Holstein showed that as this industry was often represented by very small companies, the state government was advised to strongly encourage their cooperation up to promoting company mergers because bigger business units were more competitive on the global market. This was particularly important for small shipping companies and companies within the shipbuilding value chain as well in sub-segments fishing, aquaculture, and marine technology.⁸³ According to the strategic paper published by Schleswig-Holstein's maritime cluster MCN, its members consider strategic partnerships between companies of the same and different economic segment one of the most promising chances for the future maritime industry development. Currently, the cooperation concept of maritime companies is still insufficiently developed and should be strengthened to use the whole potential of collaborations.⁸⁴

Due to their outstanding technology, German maritime industry companies are important subcontractors in various areas, but rarely system providers.⁸⁵ Locally, the subcontracting networks are developed differently in different sub-sectors. In particular, a very high export share of 60-70% and sometimes even beyond that is registered on the supply market for commercial shipbuilding. Due to growing demands of shipyards, shipping companies, and marine customers, the shipbuilding supply industry is highly technology-driven with corresponding impacts on national and international orientation far beyond Schleswig-Holstein's borders. The share of Schleswig-Holstein's supplier companies in procurements of

⁸² IHK 24 SCHLESWIG-HOLSTEIN (2017), https://www.ihk-schleswig-holstein.de/news/SH_2030/4_wirtschaftliche_basis/4_4_maritime_wirtschaft/1360546.

⁸³ DR. HEGENBART & PARTNER (2013), pp. 12 f..

⁸⁴ MCN (2015), pp. 42;44.

⁸⁵ BMWI (2011), p. 4.

Schleswig-Holstein's shipyards is relatively low. This applies particularly to the marine shipbuilding, but also partially to the civil shipbuilding. Particularly in the marine shipbuilding, suppliers from other federal states have considerable supply shares at Schleswig-Holstein's shipyards.⁸⁶ A study of maritime industry potential from 2005 suggested following measures for strengthening shipbuilding and shipbuilding suppliers in Schleswig-Holstein:

- Support for stronger cooperation of suppliers with each other and with shipyards, strengthening networking with suppliers;
- Pursuing prime contracting;
- Increasing the regional supply industry share at Schleswig-Holstein's shipyards.⁸⁷

On the other hand, the situation is different in the sub-segment of yacht- and boatbuilding. The traditional boatbuilding and the numerous small workshops as suppliers on the one side as well as customers from sailing and yacht clubs on the other side form a growing value chain, from which the maritime tourism can benefit a lot. This value chain, symbolically depicted on Image 7, is not new and is reliably rooted in the market.⁸⁸



Image 7: Boatbuilding value chain in Schleswig-Holstein⁸⁹

According to the MCN strategic report, the so-called "Industry 4.0" trend is becoming more and more relevant: the information and communication technology will lead to further changes in the maritime industry production processes. By connecting facilities, machinery, and single workpieces to the internet, information and data will be exchanged autonomously. Various company process levels will be consistently interlinked. The production will become more flexible, and product solutions can be individually customised.⁹⁰ One of the main political tasks in the next years will be interlinking different value chains of the maritime industry to increase synergy effects.⁹¹ According to the potential assessment from 2015, existing competences along the value chain in Schleswig-Holstein (R&D, production, and services) should be further developed to open up the future markets of offshore technologies, subassembly production, and marine technology. Schleswig-Holstein's favourable conditions in the area of wind turbines and efficient network expansion provide the chance to link the maritime industry competences with the focal points of the energy industry and renewable energies (e.g. offshore and onshore wind

⁸⁶ JAROWINSKY & BALANCE (2005), p. 44.

⁸⁷ JAROWINSKY & BALANCE (2005), p. 17.

⁸⁸ DR. HEGENBART & PARTNER (2013), p. 67.

⁸⁹ DR. HEGENBART & PARTNER (2013), p. 67.

⁹⁰ MCN (2015), p. 33.

⁹¹ DR. HEGENBART & PARTNER (2013), p. 13.

turbines, energy management and efficiency, construction projects acceptance).⁹² Some effort is already being made in this field. For example, the national research programme “Maritime Technologies of the Next Generation” is, inter alia, aimed at increasing competitiveness of maritime system production by new production technology and a stronger focus on organisation and interlinking.⁹³

All these measures require strong cooperation and a number of strong regional players in Schleswig-Holstein, who would support each other and add value. This is why the development of clusters and associate services is a high priority in the region, which is described in the following subchapters.

2.2. Clusters, Networks, and Associations for Maritime SMEs

Clusters, associations, and networks are a particularly important political instrument aimed at uniting maritime SMEs. To be able to compete with large players on the market and possess sufficient market power, SMEs rely on a strong network and cooperation with each other. In Germany and Schleswig-Holstein in particular, several grouping institutions are active.

2.2.1. The Maritime Cluster Northern Germany (MCN)

Currently, some industries are becoming obvious growth drivers for Schleswig-Holstein as an economic and technological centre of 2030. Schleswig-Holstein’s economic strengths lie in particular in the six specialisation fields:

- Maritime industry;
- Life sciences;
- Renewable energies;
- Food industry;
- Information technology, telecommunication, and media (ITM);
- Tourist industry.

For each of the specialisation fields, a professional statewide cluster management has been established. The federal state has established a central cluster department with the purpose of strengthening the performance and efficiency of cluster approaches. Its primary task is to support Schleswig-Holstein’s publicly subsidised cluster managements in offering their members even better needs-based services. The central cluster department actively supports the cluster managements in creation and optimisation of their individual strategies, structures, and

⁹² PROGNOSE (2014), p. 70.

⁹³ BUNDESREGIERUNG (2017), p. 13.

processes. Moreover, it supports the federal state in the implementation of cluster policy measures.⁹⁴

The Maritime Cluster Schleswig-Holstein emerged in 2005 and was financed by the federal state to support networking and cooperation of SMEs working in maritime industry and technology.⁹⁵ In 2011, building on the experience of the Maritime Cluster Schleswig-Holstein, the Maritime Cluster Northern Germany (MCN) was initiated as a joint project of the Free and Hanseatic City of Hamburg, the federal state Lower Saxony, and the federal state Schleswig-Holstein through an agreement of the three participating states and the Chambers of Industry and Commerce Schleswig-Holstein. The Chambers of Industry and Commerce North joined in 2014. Phase 1 of the joint project „Maritime Cluster Northern Germany” continued from 2011 to 2013. Based on the cluster evaluation in 2013, the participating countries agreed on continuing the cluster work in Phase 2.

A special milestone in the course of the strategy process was the cooperation agreement of five Northern German states signed in September 2014. It was agreed that the state Mecklenburg-Western Pomerania and the Free Hanseatic City of Bremen would at first cooperate with the MCN as associated partners in 2015-2016 and a joint cluster organisation would be aimed at from 2017 on.⁹⁶ Image 8 represents the milestones of the MCN development.

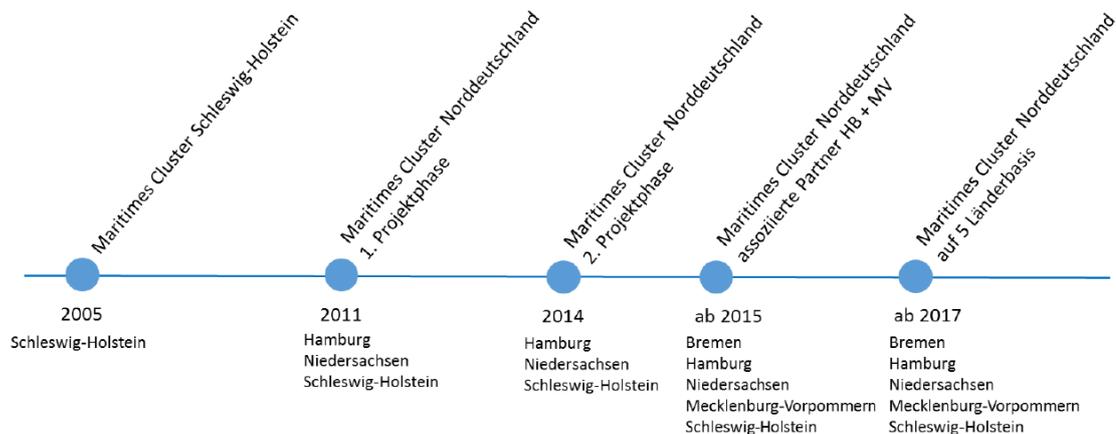


Image 8: Milestones of the MCN development⁹⁷

In the following passages, the vision, mission, and goals of the MCN are described according to the official cluster strategy document.⁹⁸

⁹⁴ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017), <https://www.schleswig-holstein.de/DE/Themen/C/cluster.html>.

⁹⁵ MCN (2017), <http://www.maritimes-cluster.de>.

⁹⁶ MCN (2015), p. 21.

⁹⁷ MCN (2015), p. 21.

⁹⁸ See in following *Ibid.*, pp. 12 f.

The MCN's vision is to become an important innovation driver for the maritime industry in Northern Germany. The maritime companies in Northern Germany should cooperate more closely with scientific institutes to meet current challenges together and to develop new markets and technologies. The MCN members should search and be open for national and international cooperation to develop and market the best possible products on the international level. They should contribute to an attractive image of the maritime industry for young talents.

The essential task and, thus, the mission of the MCN is provision and development of an interdisciplinary and international platform for the maritime stakeholders in Northern Germany. The cluster initiates the development of innovative integrated concepts and solutions on the product and process level. For this purpose, the cluster stakeholders organise a targeted collaboration of companies, research, education, and politics. The cluster creates added value for its members. It ensures an attractive and internationally leading location for investors, companies, science and research, employees and cooperation partners.

The MCN stakeholders come from business, science, education, chambers, business development, politics, and public authorities. They participate in the cluster for various reasons: companies search for cooperation with other companies, access to research results, talents, assets, subsidies, and decision makers. Universities, education institutions, and research centres look for an access to companies, third-party funds, and R&D cooperation. Politics, chambers, associations, and authorities aim at supporting establishment and maintenance of companies, location marketing, technology transfer, economic growth, employment, and innovation. The overall goal of the MCN stakeholders is strengthening innovation and international competitiveness of Northern German maritime companies.

In order to reach this overriding goal, the MCN has formulated several sub-goals till 2020:

- Strengthen transparency about the members' competences, informal relations, and knowledge base;
- Provide needs-based and goal-oriented support for member companies;
- Support and monitor projects with high system complexity;
- Strengthen risk-sharing partnerships and public funds usage;
- Exploit tendering chances;
- Support knowledge and technology exchange;
- Strengthen technical system capability and competence;
- Increase expert availability and level of competence.⁹⁹

The MCN offers its member various services, such as:

⁹⁹ MCN (2015), pp. 12 f.

- Providing information, communication, and networking;
- Supporting cooperation and implementing new ideas in innovative projects;
- Planning and conducting thematic workshops and working groups;
- Providing market support for companies;
- Public relations.¹⁰⁰

After its foundation in January 2011, the MCN has recorded constant growth. Meanwhile, over 290 companies, institutions and public bodies involved in the maritime industry belong to the MCN's network.¹⁰¹ The map on Image 9 provides an overview of the members and their location.

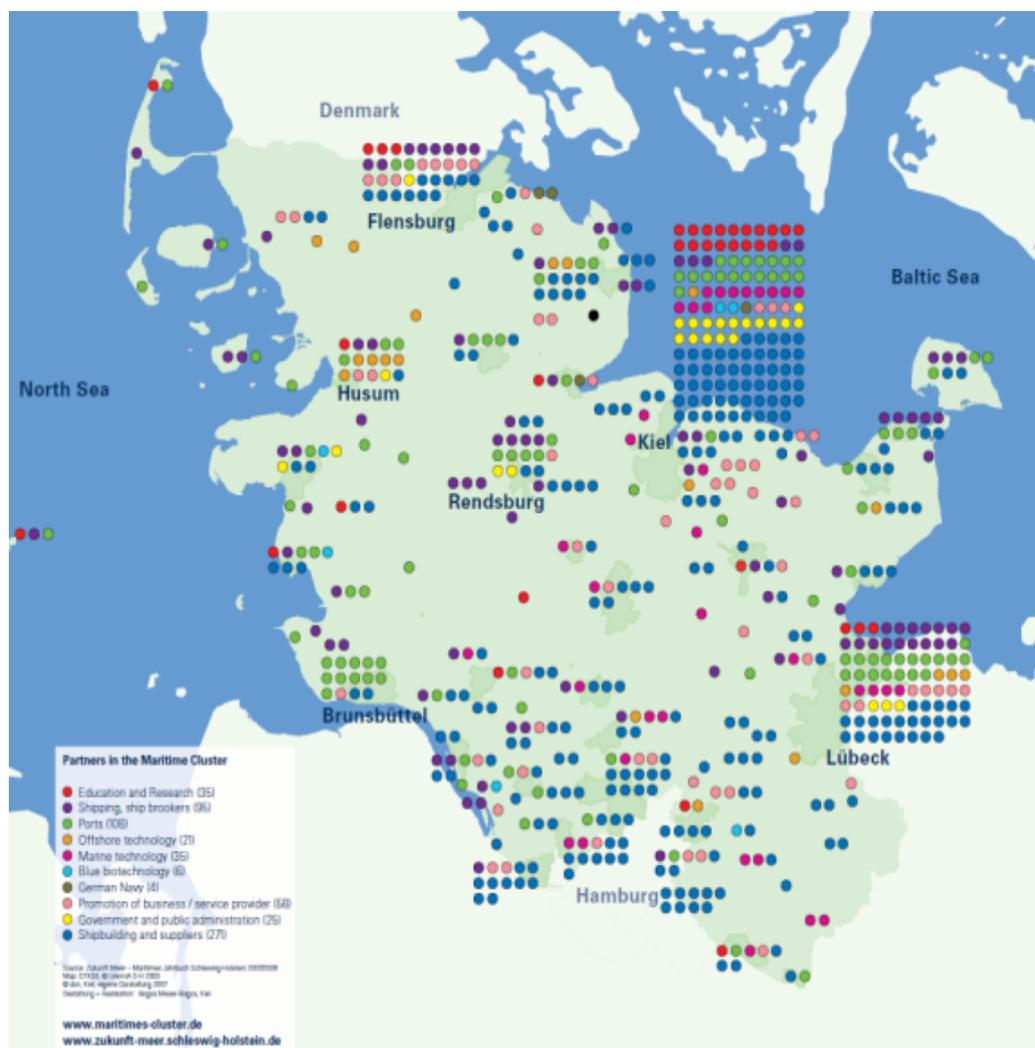


Image 9: Members of the MCN¹⁰²

¹⁰⁰ MCN (2017), <http://www.maritimes-cluster.de>.

¹⁰¹ MCN (2017), <http://www.maritimes-cluster.de/mitglieder/informationen-zur-mitgliedschaft>.

¹⁰² WIRTSCHAFTSMINISTERIUM (2013), p. 36.

Obviously, the cities of Kiel, Flensburg, and Lübeck concentrate the most members, which correlates with the geographical location of maritime industry enterprises in Schleswig-Holstein, described in Chapter 1. Ports, service providers, and business promotion units make the majority of participating companies presumably because these companies largely rely on a broad and strong network. The high number of education and research institutions is probably connected with their search for industry contacts and transfer projects and supports the previously developed statement of a strong research and knowledge background in Schleswig-Holstein. Another group is governmental institutions and public bodies, whose presence is necessary for the policy development. Among industrial members, shipping, shipbuilding, and suppliers represent the well-established sectors, as described in Chapter 1, whereas young, promising sectors offshore and marine technology are also present here.

2.2.2. The Schleswig-Holstein Renewable Energy Network Agency

The Schleswig-Holstein Renewable Energy Network Agency states that it “supports companies from the sectors of wind power, photovoltaic, biomass, network and storage technology as well as other market-ready renewable energies.”¹⁰³ Its tasks and objectives include:

- “networking sectors with each other and with industrial consumers, municipalities and politicians;
- supporting the development of new products and services, as well as the enhancement of regional research achievements, through active innovation management;
- supporting the development of new markets through the promotion of foreign trade;
- supporting the development of industrial areas on the basis of renewable energies;
- international location marketing.”¹⁰⁴

2.2.3. windcomm – Offshore Wind Cluster

According to its web page, „the network agency windcomm schleswig-holstein was founded in Husum in 2004 as a project of the Business Development Corporation Nordfriesland mbH (project-executing organization).”¹⁰⁵

„Since March 2010 the network agency has been assisted by the windcomm schleswig-holstein e. V. association in which companies from the whole spectrum of the wind energy value added chain are organized. The association’s prime objective is to provide professional advice for the network agency and financial support for the activities.

¹⁰³ WTSH (2017) – II, p.12.

¹⁰⁴ Ibid., p.12.

¹⁰⁵ WINDCOMM (2017), <http://www.windcomm-sh.de/en/windcomm/objectives.php>.

The network agency and the association combine to form a ‘think tank’ for the wind energy industry. windcomm works primarily for wind energy companies and business development corporations as well as for the government of Schleswig-Holstein and, if required, the federal government.

The core tasks are networking and facilitating among all the various players and the development and implementation of concepts for the wind industry.”¹⁰⁶

According to the web site of windcomm, its offer includes:

“For wind energy companies

- Further training workshops (windcomm workshops)
- Conferences (OBMC, windWERT)
- Trade fair booths
- Guidelines and sector-specific information
- Newsletters and advertising mails
- Business support (searches for clients and business partners, sales, marketing, queries regarding business start-ups and relocations and subsidies)

For business development institutions and policy makers

- Development of new concepts and strategies and their implementation
- Location marketing
- Data management.”¹⁰⁷

2.2.4. Working Group “Sea - Our Future”

The Ministry of Economy Schleswig-Holstein states: “The Land Government’s “Sea – Our Future” initiative is an instrument designed to strengthen Schleswig-Holstein’s good governance policy. It serves to build a transparent and efficient network between the different political stakeholders that concern themselves with the oceans. It aims to promote a structured, integrated, and innovative maritime policy and to project Schleswig-Holstein’s maritime expertise beyond the region.

An inter-ministerial steering group made up of secretaries of state, led by the Ministry of Economic Affairs, Employment, Transport and Technology, is currently steering the work and determining the topics on which the initiative is to focus. The Maritime Coordinator, who was appointed by the Land Government in 2004, fulfils a key role in shaping integrative maritime

¹⁰⁶ Ibid., <http://www.windcomm-sh.de/en/windcomm/objectives.php>.

¹⁰⁷ Ibid., <http://www.windcomm-sh.de/en/windcomm/objectives.php>.

policy by forming the interface between science and industry, as well as between the various areas of action involved in a modern maritime policy. The inter-ministerial working group “Sea - Our Future” is the operational spearhead of the Land initiative.”¹⁰⁸

2.2.5. Nationwide Maritime Associations and Networks

Regional clusters and networks play the most important role in cooperation establishment and value chain strengthening. There are further opportunities for more specific, professional exchange and networking in different maritime sectors, which are offered on the national level. They include:

- German Association for Marine Technology (GMT)” represents nationwide the interests of companies and research institutions in the area of marine technology vis-à-vis the public and policy makers.”¹⁰⁹
- Marine Equipment and Systems as part of the VDMA, “the largest industrial association in Europe”.¹¹⁰
- The German Shipowners’ Association (VDR) - “a leading professional association within the German business community”¹¹¹
- VSM – Association for Shipbuilding and Marine Technology¹¹²
- The Central Association of German Seaport Operators (ZDS)¹¹³

So far, the present subchapter shows that there are many associations and organisations providing services and advice to SMEs in various segments of the maritime industry. The MCN is the first contact point providing relevant information and navigating companies through the whole network. Thus, it can be stated that Schleswig-Holstein has a well-developed and differentiated maritime cluster and association landscape interlinking with the wind energy network, which is particularly interesting for such segments as offshore wind and its suppliers.

2.3. Supporting Measures for Regional Cooperation and Networking

Schleswig-Holstein acknowledges the importance of cooperation and networking and supports the maritime industry by immediate network project funding and indirect development through associate services. These measures are presented in this subchapter.

¹⁰⁸ WIRTSCHAFTSMINISTERIUM (2013), p. 9.

¹⁰⁹ Ibid, <http://www.maritime-technik.de/en-objectives.php>.

¹¹⁰ VDMA (2017), <https://mes.vdma.org/article/-/articleview/1015817>.

¹¹¹ Ibid., <http://www.reederverband.de/en/themes-positions.html>.

¹¹² VSM (2017), <http://www.vsm.de/en/association>.

¹¹³ ZDS (2017), <http://www.zds-seehaefen.de>.

2.3.1. Project Funding

Schleswig-Holstein offers funding for non-profit organisations realising projects in development of regional cooperation and networks. There are two guidelines supported by the European Regional Development Fund (ERDF) and federal funds:

- Support of Regional Developments Processes and Regional Cooperations;
- Support of Cooperation Networks and Cluster Managements in Schleswig-Holstein.¹¹⁴

The goal of these guidelines is to support regions' and indirectly SMEs' competitiveness, improve site conditions as well as mobilise specific employment and growth potentials in Schleswig-Holstein. According to the guidelines, the funding is available for communities and municipal associations, legal entities pursuing tax-privileged purposes, and non-profit organisations.¹¹⁵ Thus, typical SMEs cannot be funded with these programmes but can only indirectly profit from them.

2.3.2. Associated Services

Another way to support cooperation of maritime SMEs indirectly is to develop some associate services, such as infrastructure, start-up support, and territory attractiveness policies. These services are described below in this subchapter.

2.3.2.1. Infrastructure

Infrastructure is an important factor for the value chain development, and it becomes even more important in the globalising world. The ports in Schleswig-Holstein play an important role for trade, transport, and service as significant logistic nodes for the federal state, Germany, and partially Europe. The Schleswig-Holstein's ports differentiate in terms of their geographic location into the Baltic and North Sea ones. There are 40 ports of significant economic importance in Schleswig-Holstein. The biggest of them are situated on the Baltic Sea: Lübeck, Kiel, Puttgarden, Flensburg, Rendsburg (Rendsburg Port in Osterrönfeld), Heiligenhafen and Neustadt. The biggest port locations on the North Sea include Brunsbüttel, Husum, Büsum, Dagebüll, Wyk auf Föhr, Wittdün/Amrum and Glückstadt.¹¹⁶ The main airports of Schleswig-Holstein Lübeck, Sylt, and Kiel Holtenau play only a minor role for the maritime industry.¹¹⁷ The overview of Schleswig-Holstein's main infrastructure points is provided by Image 10.

¹¹⁴ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017),
https://www.schleswig-holstein.de/DE/Fachinhalte/F/foerderprogramme/MWAVT/foederrichtlinien_LPW.html.

¹¹⁵ Ibid.,
https://www.schleswig-holstein.de/DE/Fachinhalte/F/foerderprogramme/MWAVT/foederrichtlinien_LPW.html.

¹¹⁶ DR. HEGENBART & PARTNER (2013), pp. 45.

¹¹⁷ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017),
https://www.schleswig-holstein.de/DE/Fachinhalte/L/luftfahrt/flugplaetze_SH.html.



Image 10: Infrastructure in Schleswig-Holstein¹¹⁸

The Kiel Canal is almost 100 km long and builds a connection between the Baltic and the North Seas. The most international freight traffic in the Baltic Sea Region goes over this canal. With ca. 31.000 ship passages per year, the Kiel Canal is the busiest man-made waterway worldwide. The Kiel Canal's geographical location is depicted on Image 11.¹¹⁹

¹¹⁸ WTSH (2017) - II, p. 7.

¹¹⁹ DR. HEGENBART & PARTNER (2013), pp. 20 ff.



Image 11: The Kiel Canal's Geographical Location¹²⁰

The existing shortcomings of the maritime transport infrastructure in Northern Germany are one of the current weaknesses of Schleswig-Holstein's maritime industry according to the results of the MCN SWOT analysis. Although some seaport infrastructure is available and the Kiel Canal is an important shipping route, MCN members complain about bottlenecks in seaports, on seaward access routes, hinterland links, and the Kiel Canal. Expansion and renovation of the infrastructure are not only necessary for the freight traffic, but also for intensification of innovative technologies since the latter often rely on special devices or storage locations.¹²¹

In order to meet the needs of the strongly growing shipping traffic on the Kiel Canal, the potential study by DR. HEGENBART AND PARTNER (2013) urgently recommends further expansion measures: improving the East line area (e.g. broadening the canal and flattening narrow bends) and building the fifth lock chamber in Brunsbüttel. Moreover, it is urgently necessary not only to tackle the renovation of locks in Kiel-Holtenau and Brunsbüttel, but also to subject this waterway to an extensive complete renovation and deepening.¹²²

¹²⁰ Picture rights: <http://navy.memorieshop.com/Atlantic/Kiel-Canal.html>

¹²¹ MCN (2015), p. 42.

¹²² DR. HEGENBART & PARTNER (2013), pp. 20 ff.

The government of Schleswig-Holstein has identified the problem and supports some logistic improvements. Since 2012, further logistics development measures have been initiated and/or implemented in Schleswig-Holstein:

- Service Point Kiel Canal: “effective maintenance and repair of ships journeying through Kiel Canal using a special internet portal for shipping agents, shipyards and suppliers”;
- Project “Offshore-Logistik” (Offshore Logistics Project): “multifunctional logistics platforms for wind farms in Germany’s exclusive economic zone”;
- Port Cooperation “Offshore Ports North Sea Schleswig-Holstein”: “networking and harnessing the potential of ports in Schleswig-Holstein, focusing on “production, logistics and service ports” for offshore wind farms in the North Sea”;
- “Development of Kiel’s port infrastructure: Schwedenkai (Sweden Quay), Norwegenterminal (Norway Quay) and Ostuferhafen”;
- “Development of the Hanseatic City of Lübeck’s port infrastructure: Seelandkai terminal and a new berth at Skandinavienkai terminal”;
- “Kiel Canal heavy load harbour in Osterrönfeld: Construction of a universal harbour capable of handling heavy loads”;
- “Heligoland: Construction of a new cargo and offshore quay as well as modernisation of the inner harbor”;
- “Brunsbüttel: Construction of a new harbour section for shipping offshore components”.¹²³

Therefore, although several measures have already been taken, the maritime infrastructure in Schleswig-Holstein still needs further improvements and extensions.

2.3.2.2. Start-Up Support

Business start-ups undergo a significant decline nationwide. The main reason for the low start-up dynamics rate is the currently high employment level and the stable labour-market situation.¹²⁴ In 2016, fewer enterprises were founded in Schleswig-Holstein as in the previous year: overall 20.075 new firms, which means a 2,7% decline comparing to 2016.¹²⁵ However, newly emerged companies can fill in the gaps in existing regional value chains and become important suppliers for well-established businesses. This is why it is particularly important to create attractive conditions for start-ups and support them on their way to establishment.

¹²³ WIRTSCHAFTSMINISTERIUM (2013), pp. 54 ff.

¹²⁴ WIRTSCHAFTSMINISTERIUM (2016), p. 3.

¹²⁵ STATISTISCHES AMT (2017), p. 7.

Schleswig-Holstein has a broad locally anchored offer to support those interested in starting a business. The services include following measures:

- EA-SH - Point of Single Contact Schleswig-Holstein: single contact for on-line business registration, service for managing various entrepreneurial issues with public authorities on-line.¹²⁶
- Funding guides of Investment Bank Schleswig-Holstein: consulting on optimal federal, national, and European funding opportunities for business start-ups, application procedures and requirements, equity requirements and guarantees, requirements for start-up and business concepts.¹²⁷
- IHKs - Chambers of Industry and Commerce and HWKs - Chambers of Crafts: realisation of national funding offers, and consulting on business concepts, location, market, and competition.¹²⁸
- Volunteer association “Mentoren für Unternehmen in Schleswig-Holstein” (Mentors for Companies in Schleswig-Holstein): advice and workshops from former managers and founders: current situation analysis, technical, economic and administrative issues, strategy development, support with bank negotiations, succession regulation and realisation.¹²⁹
- Brochures with relevant information for business founders “Selbstständig werden in Schleswig-Holstein” (Become Self-Employed in Schleswig-Holstein). In this respect, it is recommended to create a statewide Internet founder portal for better communication and information in the future.¹³⁰
- National consulting programme “Förderung unternehmerischen Know-Hows” (Funding Entrepreneurial Know-How): support for young SMEs under 2 years with a consulting subvention of up to EUR 2.000.¹³¹

This is a list of consulting support offers for SMEs. Besides, there exist a number of financial support tools and grants, which are described in detail in Chapter 4. This list shows that start-ups can access decent advice and consulting in Schleswig-Holstein and receive optimal attention.

2.3.2.3. Territory Attractiveness Policies

Not only regional start-up business, but also subsidiaries and affiliates of companies from other regions and companies can strengthen the regional value chain by bringing competitive products

¹²⁶ EA-SH (2017), https://www.ea-sh.de/EA/DE/Informieren/Existenzgruendung/existenzgruendung_node.html.

¹²⁷ IB.SH (2017),

<https://www.ib-sh.de/wirtschaft-technologie/existenzgruenderinnen-und-existenzgruender/foerderlotsen-der-ibsh>.

¹²⁸ WIRTSCHAFTSMINISTERIUM (2016), pp. 8 f.

¹²⁹ MENTOREN SH (2017), <https://www.mentoren-sh.de/beratungsleistungen>.

¹³⁰ WIRTSCHAFTSMINISTERIUM (2016), pp. 8 f.

¹³¹ Ibid., (2016), pp. 8 f.

and services missing on the market. Therefore, territory attractiveness policies belong to the associated services helping the maritime industry in general.

The Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) is the main business promotion organisation in the region. It states that “WTSH’s mission is to contribute through its activities to the creation of as much added value and as many new jobs as possible in Schleswig-Holstein. Its goals include:

- Attracting companies to Schleswig-Holstein as a business location;
- Initiating and accompanying the establishment of new companies in Schleswig-Holstein;
- Guiding existing companies into foreign markets;
- Supporting existing companies in their innovation processes;
- Attracting or retaining specialist personnel for Schleswig-Holstein.

The fields of action derived from these goals are divided into three service areas:

- Business location marketing;
- Facilitating the establishment of new businesses in the state;
- Helping to develop existing businesses (mainly through focusing on innovations and foreign trade). ”¹³²

According to the WTSH, “the aim in business location marketing is to put across Schleswig-Holstein as an interesting location for business, work and living – and thus not only to prepare the ground for the establishment of new businesses but also to ensure existing companies and specialist personnel stay in Schleswig-Holstein.

Besides organising business location marketing, WTSH offers a broad range of services to support companies in setting up a business in Schleswig-Holstein. Besides initiating and providing organisational assistance in such cases, WTSH attaches great importance to supplying companies interested in setting up business here with factual advice. Since one explicit goal is to promote the siting of technology-oriented manufacturing companies, the technological competence of WTSH’s business location consultants is of particular relevance to such projects. And that is why these projects are serviced by entire teams composed not just of business location consultants but also of technology experts from WTSH’s Innovations Department. If required, specialists from the Foreign Trade Department will also join the team to provide additional information about the support available in foreign trade matters.”¹³³

The MCN also claims to support Schleswig-Holstein in becoming an internationally leading maritime location for investors, companies, science and research, employees, and cooperation

¹³² WTSH (2017), <https://wtsh.de/media/?lang=en>.

¹³³ Ibid. (2017), <https://wtsh.de/media/?lang=en>.

partners. Development and implementation of the regional and international maritime location marketing of Northern Germany, enhancing its reputation, and raising awareness contributes to strengthening of the business location in the international competition. MCN and federal business development organisations take on this responsibility.¹³⁴

These overall measures are targeted on different industries. The maritime industry potential assessment from 2015 recommends some further specific maritime industry oriented activities for increasing territorial attractiveness:

- Positive and long-term reliable environment for further expansion of the offshore wind industry in the North Sea and attractiveness for companies of this field;
- Increasing attractiveness of Schleswig-Holstein for the maritime tourism, particularly cruise tourism: creating new maritime attractions, improving the condition and marketing of the existing ones;¹³⁵
- Enhancing the attractiveness of the port location by investments in tail gas treatment unit disposal facilities and following the environmental developments.¹³⁶

It can, thus, be summarised that Schleswig-Holstein has taken several general measures to include its territorial attractiveness, but some targeted development in the maritime industry would be still helpful.

2.4. Summary

The analysis in this chapter has shown that Schleswig-Holstein is well aware of the important role that cooperation and value chain strengthening play in the regional economy. As the majority of companies in the region are SMEs, they strongly rely on uniting organisations and short value chains to increase their market power. Whereas the value chain cooperation works well for boat and yacht building, it is still weak in the shipbuilding sector. Strengthening value chains and interlinking them between each other is an important political task for the maritime industry.

That is why the Maritime Cluster Northern Germany (MCN) and other associations are very important political instruments for strengthening cooperation. Other measures include project funding (not for SMEs, but only public and non-profit institutions) and development of associated services. Infrastructure development is particularly important for Schleswig-Holstein and should be one of the political priorities. Concerning start-up support offers and territory attractiveness policies, Schleswig-Holstein has initiated several activities and supports them.

¹³⁴ MCN (2015), p. 12.

¹³⁵ DR. HEGENBART & PARTNER (2013), p.12.

¹³⁶ Ibid., p. 50.

The summary of Schleswig-Holstein’s good practices for strengthening value chains is provided in Table 4.

<p>Good Practices – Strengthening Value Chains</p>	<ul style="list-style-type: none"> • The Maritime Cluster Northern Germany (MCN) • The Schleswig-Holstein Renewable Energy Network Agency • windcomm – Offshore Wind Cluster • Working group “Sea - Our Future” • Community funding guidelines “Support of Regional Developments Processes and Regional Cooperations” and “Support of Cooperation Networks and Cluster Managements in Schleswig-Holstein” • EA-SH - Point of Single Contact Schleswig-Holstein • Funding guides of Investment Bank Schleswig-Holstein • IHKs - Chambers of Industry and Commerce and HWKs - Chambers of Crafts • Volunteer association “Mentoren für Unternehmen in Schleswig-Holstein” (Mentors for Companies in Schleswig-Holstein) • The Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH)
---	---

Table 4: Summary of Good Practices for Strengthening Value Chains in Schleswig-Holstein

3. SMEs' Competitiveness by Internationalisation

The SWOT and PEST analysis in Chapter 1 has shown that internationalisation is a key to future success of Schleswig-Holstein's maritime companies. The present chapter concentrates on regional and national activities promoting the involvement of SMEs in international markets. The chapter is separated into regional and national internationalisation support measures and provides an overview of the existing offers for SMEs. The chapter ends with a conclusion on good practices of SMEs' internationalisation policies in Schleswig-Holstein.

3.1. Schleswig-Holstein's Regional Measures for SMEs' Internationalisation

The present subchapter contains descriptions of regional support offers for SMEs: Enterprise Europe Network by IB.SH Europa, internationalisation support by the Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH), and financial support for SME's internationalisation by the regional government.

3.1.1. Enterprise Europe Network

The Enterprise Europe Network Hamburg-Schleswig-Holstein is a part of a European network supporting and informing in particular SMEs and communities in all EU-related aspects.¹³⁷ The network partner in Schleswig-Holstein, IB.SH Europa, systematically provides collaboration contacts to help SMEs establish stable connections in Europe. The monthly-published lists of European contacts provide German companies with a good overview of cooperation offers. Besides, IB.SH Europa supports companies in creating their own profiles and places them in the European Commission Business Cooperation Database, which can be accessed by almost 600 Enterprise Europe Network partners.¹³⁸

The project has been financed in line with the COSME programme in two phases with the following explanations of its main activities:

3.1.1.1. Phase 1: 01/01/2015 – 31/12/2016

“Enterprise Europe Network Hamburg and Schleswig-Holstein is well established as the region's central one-stop-shop for all EU-related enquiries for SMEs and other regional stakeholders. The partners work with each other to enhance regional cooperation between Hamburg and Schleswig-Holstein. The partnership permits a genuine sharing of expertise within the region, a fact that is important given the contrasting economic position of a strong

¹³⁷ IB.SH (2017),

<http://www.ib-sh.de/die-ibsh/europakompetenz/enterprise-europe-network-hamburg-schleswig-holstein/>.

¹³⁸ IHK 24 SCHLESWIG-HOLSTEIN (2017),

<https://www.ihk-schleswig-holstein.de/international/kooperationen/datenbanken/unternehmenskooperationen/1372868>.

metropolitan trade orientated city of Hamburg, and the more rural Schleswig-Holstein. Enterprise Europe Network can significantly contribute to ensuring that collaborative approaches are identified wherever possible. For the period 2015-2016, the core objectives are to further expand the client base, but also to deepen the level of assistance provided. The guiding principle is that services will be tailored to the needs of regional innovators and innovation systems as well as to the clients' needs regarding internationalisation services. The partners will build on their established networks with regional players and good contacts to clients. The partners will continue to offer Enterprise Europe Network services on a broad front such as brokerage services, company missions, support for international business contacts, participation in EU funding programmes and consultation on enhancing the innovation capacities in companies. Consultancy will be provided towards SMEs in general, but the focus on specific growth sectors regarded as regional strengths for economic development should be maintained. This will include close collaboration with regional clusters particularly in sectors important to the region i.e. for renewable energy, aerospace technologies, maritime industries, transport and logistics, life sciences and food, while at the same time ensuring that companies outside the key sectors and clusters are supported. Furthermore, measures will be taken to enhance the cooperation between research institutions/universities and enterprises.”¹³⁹

3.1.1.2. Phase 2: 01/01/2017 – 31/12/2018

„The Europe 2020 Strategy considers small and medium-sized enterprises (SME) to be crucial engines for smart, sustainable and inclusive growth and job creation in the European Union. In order to respond to these demands, it is of high importance that European SMEs exploit international opportunities and innovation prospects to a large extent. Nevertheless many small companies in the EU face problems when trying to enter foreign markets, internationalise and innovate their business. Only 25% of EU-based SMEs export at all and an even smaller number export beyond European borders. The Enterprise Europe Network aims to improve this situation. Supported by the Network's expertise, SMEs shall be enabled to attract funding, access foreign markets, and find new business and research partners abroad. With the support of the Network, they are expected to increase their performance, enhance competitiveness, increase innovation potential and reinforce sustainable growth. The objective of the project in Hamburg and Schleswig-Holstein is to enhance competitiveness of local SMEs by supporting them to engage in international business activities and innovation and to participate in European funding programmes. EEN HSH aims to reach a wide range of SMEs with potential for international collaboration and/or highly innovative activities. EEN HSH will focus on SMEs which have the greatest potential to benefit from the support services offered and on regional key sectors.

¹³⁹ COSME (2017), <https://cosme.easme-web.eu>.

EEN HSHH strives to offer them comprehensive and integrated EU-related services of high quality.”¹⁴⁰

Therefore, the Enterprise Europe Network Hamburg-Schleswig-Holstein and IB.SH Europa are the main contact points for SME internationalisation in Schleswig-Holstein.

3.1.2. Internationalisation Support by the Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH)

On the official WTSH page, it is stated that the corporation supports SME’s internalisation with several offers: “WTSH’s foreign trade team analyses the export potentials of small and mid-sized companies and produces concrete market-entry strategies tailored to the particular profile of each business. The focus here is on fast-growing emerging economies (Brazil, Russia, India, China, Malaysia and Indonesia), which combine great market potential with high barriers to entry for small and mid-sized companies. The Schleswig-Holstein Business Centers set up to assist such companies offer efficient supportive facilities in the target markets. In addition, WTSH’s Fair Service Department offers companies the opportunity to exhibit at international trade fairs by participating at joint Schleswig-Holstein or North German stands. Last but not least, WTSH provides practical support in the development of business, technology and project partnerships via the European Enterprise Network (EEN).”¹⁴¹

The WTSH’s joint stands at international fairs offer in particular SMEs an excellent opportunity to present themselves and their ideas to a broader audience. The partnership-based exhibition reduces the costs for individual companies and simultaneously ensures a high distinctiveness and recognition value by a unified appearance. The comprehensive WTSH trade fair package includes:

- Foreign trade consulting, market research, enterprise contacts;
- Preparatory workshop for trade fair participation;
- Concept development for the joint booth;
- Public relations, advertising, events;
- On-site booth supervision;
- Supporting programme at the trade fair location (get together, cooperation forum, company visits).

Thus, the WTSH also takes on all organisational and service tasks.¹⁴² A picture of a joint booth is presented on Image 12).

¹⁴⁰ Ibid. <https://cosme.easme-web.eu>.

¹⁴¹ WTSH (2017), <https://wtsh.de/media/?lang=en>.

¹⁴² Ibid., <https://wtsh.de/messen/>.



Image 12: Example of a Joint Stand by WTSH¹⁴³

As the picture demonstrates, various SMEs are united under one booth and thus receive more visibility at international fairs. Besides, it gives them the opportunity to spare costs.

Some of the most important international trade fairs maritime SMEs from Schleswig-Holstein take part in include:

- SMM (Ship, Marine, Marine Technology): the most important maritime trade fair for marine industry in the world, which takes place every two years in Hamburg. It offers the opportunity to present German technologies to a broad international audience. Due to the good growth potential of the marine technology, its presence at the fair has increased in the recent years. In 2010, a well-frequented workshop on the Offshore topic „Offshore Dialogue” was organised with the help of the Ministry of Economics of Schleswig-Holstein.¹⁴⁴ The presence of Schleswig-Holstein’s companies at SMM is encouraged and supported.
- OTC (Offshore Technology Conference): the leading trade fair for the Offshore Oil & Gas segment in Houston. Schleswig-Holstein’s marine technology SMEs can only be perceived as full global players by the global Oil & Gas groups if they have a serious,

¹⁴³ Ibid., <https://wtsh.de/messen/>.

¹⁴⁴ BUNDESREGIERUNG (2017), p. 47.

reliable support from the German politics. This necessarily requires the presence of a minister or at least a state secretary at OTC as a door opener for SMEs.¹⁴⁵

- HusumWind: the wind energy trade fair. It has an important function for the wind energy location as a „temporary cluster” and inducts important networking processes and knowledge flows as a national wind trade fair.¹⁴⁶
- Hamburg WindEnergy: the worldwide leading trade fair of the wind industry: international visitors and exhibitors from all over the world meet at this trade fair. Business transactions and new market development are particularly important here.¹⁴⁷

3.1.3. Financial Support for SME’s Internationalisation

In 2017, the Ministry of Economics of Schleswig-Holstein has significantly improved and extended the already existing directive for funding of SMEs’ internationalisation and market development abroad. The funding is provided from the means of the European regional fund ERDF to strengthen international competitiveness of Schleswig-Holstein’s companies. The improved funding guidelines for Schleswig-Holstein’s companies will support inter alia export advice or participation in international exhibitions and trade fairs in Germany and abroad. The funding amounts up to 50% of total costs for the first trade fair participation, the maximum funding is EURO 10.000 per trade fair participation.¹⁴⁸

There are two funding programmes for SMEs’ export strategy support in Schleswig-Holstein:

- Programme „Außenwirtschaftsförderung – Gemeinschaftsbüro” (Foreign Trade Support – Shared Office): the goal of this programme is to support local SMEs in new market development in non-European foreign countries. Thus, the chances are increased that SMEs intensify their export business participation and contribute to the job security and creation in Schleswig-Holstein. The programme provides funding for participation of SMEs in offices shared abroad that explore the available export potential.¹⁴⁹
- Programme „Internationalisierung von kleinen und mittleren Unternehmen und Markterschließung im Ausland” (Internationalisation of SMEs and Market Development Abroad): the goal of this programme is to motivate SMEs to participate in foreign trade activities. SMEs are funded when they use respective consulting services or participate in trade fairs. The new market development abroad should contribute to

¹⁴⁵ DR. HEGENBART & PARTNER (2013), p. 42.

¹⁴⁶ PROGNOSE (2014), p. 75.

¹⁴⁷ WTSH (2017), <https://wtsh.de/messen/>.

¹⁴⁸ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017),

http://www.schleswig-holstein.de/DE/Landesregierung/VII/Presse/PI/2017/170601_Internationalisierung_KMU.html.

¹⁴⁹ WTSH (2017),

<https://wtsh.de/foerderberatung-der-wtsh/foerderprogramme/foerderprogramm-aussenwirtschaftsfoerderung-gemeinschaftsbueros/>.

job creation and security in Schleswig-Holstein and strengthen SMEs' competitiveness.

The programme provides funding for existing export potential mobilisation measures:

- Consulting on export chances for goods and services;
- Consulting on foreign market development;
- Participation in and organisation of international trade fairs and exhibitions in Germany and abroad.¹⁵⁰

To sum up, Schleswig-Holstein offers several consulting and financial programmes for SMEs' internationalisation. Besides, there are several offers on the German national level, from which regional SMEs can profit. These are described in the following subchapter.

3.2. German National Measures for SMEs' Internationalisation

The present subchapter summarises existing national offers for SMEs' internationalisation. The SMEs in Schleswig-Holstein are eligible to apply for these offers and benefit from them.

The German government supports German shipyards extensively with the federal export credit guarantees and the federal CIRR interest adjustment guarantees. Numerous exports are enabled this way. The funding instruments are applied individually and flexibly in accordance with international rules and budget principles. The federal government pursues the target to create internationally comparable competition conditions for German shipyards. With the state loan guarantees, the federal states provide shipbuilding with a tool that can in particular be used by shipyards for the construction financing. Overall, the German government states that the possibilities are well depleted with the existing funding instruments although the lacking equity base of SMEs remains unchanged. Moreover, the German government supports the foreign activities of the maritime industry in the challenge of opening up and securing foreign markets by funding participation in international trade fairs, information and contact visits as well as with political flanking. Under the new umbrella brand „Mittelstand Global“ (SMEs Global), the funding options of the Federal Ministry for Economic Affairs and Energy are reordered and more closely bundled according to organisational and thematic criteria.¹⁵¹

The classical instruments of export promotion are trade fair participation, delegation trips, political flanking, and financial instruments. According to the National Master Plan Maritime Technologies, some targeted measures, such as participation of German political representatives in international industry conferences and trade fairs, can be particularly efficient. Other

¹⁵⁰ Ibid.,

<https://wtsh.de/foerderberatung-der-wtsh/foerderprogramme/foerderprogramm-internationalisierung-markterschliessung/>.

¹⁵¹ BUNDESREGIERUNG (2017), pp. 14 ff.

important topics include increasing German influence on standardisation and project-based developmental cooperation.¹⁵²

3.2.1. Federal Export Credit Guarantees (Hermes)

In 2016, civil and marine ship transactions with a volume of about EURO 2,9 billion were insured by federal export credit guarantees. Thus, the federal export credit guarantees made an important contribution to the support of the maritime industry and to the securing of workplaces at German shipyards. The federal outstanding risk from all adopted ship transactions made about EURO 29 billion by the end of 2016.¹⁵³

3.2.2. CIRR (Commercial Interest Reference Rate) for Ship Financing

Since 2008, the German government has been offering CIRR interest adjustment guarantees for the financing of ships that are built at German shipyards. Herewith, the ship financing banks are offered a fixed interest rate option already at the time of building contract conclusion and, thus, several years before the ship delivery. Since the introduction of the ship CIRR interest adjustment system till the end of 2016, 133 new ship constructions with an order volume of about EURO 24,6 billion were approved. Of all since 2008 granted CIRR interest adjustment guarantees, 24 ship transactions with a total funding volume of EURO 4,9 billion are in the interest adjustment now. Apart from the above named civil ship transactions, one marine ship transaction with a total funding volume of EURO 2,1 billion is also in the interest adjustment. In ten cases, an interest fixing could be implemented due to the current low-interest phase, and, therefore, the federal risks have been significantly reduced. Moreover, 17 transactions with a total volume of EURO 8 billion have not yet reached the deadline: 60 days prior to the first loan payment. CIRR interest adjustment guarantees can be returned before the deadline.¹⁵⁴

3.2.3. Market Development Programme MEP

The programme „Maßnahmen zur Erschließung von Auslandsmärkten für kleine und mittlere Unternehmen des produzierenden Gewerbes und für Dienstleister“ (MEP) – Measures for Development of Foreign Markets for SMEs of Production Industries and Services – was started in 2012 by the Federal Ministry for Economic Affairs and Energy and supports SMEs in positioning themselves on international markets. Since 2016, the maritime industry is supported more strongly. The MEP offers are divided in modules, which can be combined with each other. Following modules are open to maritime companies:

- Market information;
- Market survey;

¹⁵² BMWi (2011), p. 20.

¹⁵³ Ibid., p. 20.

¹⁵⁴ Ibid., p. 20.

- Business initiation;
- Procurement and information visits;
- Manager training;
- Trade fair participation.

Besides, with its International Trade Fair Programme, the Federal Ministry for Economic Affairs and Energy supports the companies' participation in trade fairs and exhibitions worldwide. The German Chambers of Commerce Abroad and the federal foreign trade company „Germany Trade and Invest“ (GTAI) consult companies on the market development worldwide and offer SMEs a competent and reliable decision-making tool for new market development with their extensive service offer. Thus, the GTAI published about 80 reports on selected special topics of the maritime industry and on various countries between 2012 and 2016.¹⁵⁵

3.2.4. Political Flanking

Besides the international market development offers described above, an interdepartmental flanking on the political level is important. This includes regular visits of important leading trade fairs by high-ranking government representatives and close bilateral relationships to important partner countries in the course of regular government consultations. Export success on foreign markets and national reference projects are of crucial importance for all maritime sub-sectors. With a view to the German marine shipbuilding, they ensure basic utilisation and preservation of an efficient national defence industry. The interdepartmental political flanking of exports in the marine segment is always a case-by-case decision in accordance with the „Political Principles of the Federal Government for the Export of War Weapons and Other Armaments“ from 2000 in consideration of security and armament interests as well as for the key technologies funding.¹⁵⁶

3.2.5. Set of Measures for Strengthening the Competitive Situation of German Enterprises

In October 2016, the German government determined the key points of a strategy paper „New Impulses for the International Competition for Strategic Major Projects – Improving Chances for Germany“. The measures named in the key points strengthen the competitive position of German companies in strategic major projects. The main action fields are the better coordination with the German government and the focus of existing funding instruments on the needs of German companies. With its strategy paper, the German government especially takes account of the fact that Asian competitors systematically receive political support for industrial major

¹⁵⁵ Ibid., p. 20.

¹⁵⁶ Ibid., p. 20.

products from their countries of origin, which is also reflected in extensive financing offers. The measures contained by the key points should counteract them.¹⁵⁷

3.3. Summary

The analysis in this chapter has shown that there are regional and national measures supporting internationalisation of SMEs. On the regional level, the Enterprise Europe Network by IB.SH Europa, the Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) provide extensive consulting, matchmaking, contact establishment, and various services for SMEs wishing to enter the international market. The ERDF funds enables financial support for trade fair participation and export potential exploration. On the national level, export credit guarantees, Market Development Programme MEP, and political flanking are designed to push forward companies' international activities, and further work is conducted in this regard. Table 5 summarises the regional good practices of SMEs' internationalisation support.

Good Practices – Internationalisation	<ul style="list-style-type: none"> • Enterprise Europe Network • Business Development and Technology Transfer Corporation of Schleswig-Holstein (WTSH) – foreign trade department • Funding programme “Foreign Trade Support – Shared Office” • Funding programme “Internalisation of SMEs and Market Development Abroad”
--	---

Table 5: Summary of Good Practices for Internationalisation in Schleswig-Holstein

¹⁵⁷ Ibid., p. 20.

4. SMEs' Competitiveness by Risk-Sharing

Projects with a high innovation level or a high system complexity often require larger investments already at the exploratory stage. The maritime SMEs in Schleswig-Holstein can often hardly finance these investments alone.¹⁵⁸ The present chapter concentrates on funding of maritime SMEs in Schleswig-Holstein and financial support offered to them on the regional, national, and European levels. First, the current financial situation in the maritime industry in Schleswig-Holstein is described. Afterwards, regional, national and European financial tools available for SMEs are presented and described. Particular attention is given to the allocation of EFRE funds in Schleswig-Holstein. Finally, the outlook on possible risk-sharing improvement based on the analysis of several studies is provided and a summary is given.

4.1. Current Financial Situation of the Maritime Industry

Since the last global economic and financial crisis, the framework for the shipbuilding financing has undergone a fundamental change. Banks and funds have diminished their involvement in building and buying new ships after the financial crisis. The ship financing conditions of banks have deteriorated since the crisis outburst. The required equity ratio for new shipbuilding projects has significantly increased since then.¹⁵⁹

These upheavals in financial and business sectors have strongly influenced the maritime industry in Schleswig-Holstein, and these influences continue to have an effect today. The economic difficulties in ship financing affect ship owners and funders operating in this segment today. In Schleswig-Holstein, the HSH Nordbank, one of whose main business activities was ship financing, is affected primarily.¹⁶⁰ “The formerly world’s biggest ship financier”¹⁶¹, the HSH Nordbank had to almost completely retract from this area and is no longer of significance in the ship financing industry. Commerzbank, Dresdner Bank, and Deutsche Schiffsbank are also almost out of this segment. This has led to difficult economic conditions for the whole shipbuilding value chain, in particular in Schleswig-Holstein.¹⁶² In Schleswig-Holstein, the situation is exacerbated by the fact that the federal state lacks a historically developed structure of private-sector venture capital firms (particularly relevant for the larger start-up, expansion, and buy-out phase financing) and a business angel scene (particularly relevant for the smaller seed phase financing and experience-based consulting), which are of enormous importance for

¹⁵⁸ MCN (2015), p. 49.

¹⁵⁹ MCN (2015), p. 34.

¹⁶⁰ PROGNOSE (2014), p. 34.

¹⁶¹ HSH NORDBANK (2006),

https://www.hsh-nordbank.de/media/pdf_3/investorrelations/ratings/moodys/moodys_report_07122006.pdf.

¹⁶² DR. HEGENBART & PARTNER (2013), p. 10.

both financing and identification of seminal business ideas and, thus, development of foundation location.¹⁶³

The overall difficult financial situation as well as insufficient financing opportunities for maritime companies are considered a weakness of maritime industry in Schleswig-Holstein by maritime companies, as proven by an MCN survey in 2015. The companies fear that the investment capital opportunities will decrease in the future.¹⁶⁴ Shipyards and shipping companies are bound to find new ways of financing. According to a study by PwC from 2013, the deciders from the maritime industry state that the German maritime industry will be largely financed by foreign investors until 2020. The financing difficulties will extend from building and buying ships to ship operation as well. Only the measures increasing the competitiveness of existing ships will be financed by German banks.¹⁶⁵ Therefore, maritime industry relies on public funding and new private capital. The information on funding opportunities is provided in the following subchapters.

4.2. Regional, National, and European Financing Tools

The difficult financial situation and insufficient financing opportunities for maritime companies complicate the development of maritime companies in Northern Germany. Regional, national, and European funding tools contribute to financing of innovative projects.¹⁶⁶ Table 5 below represents the regional, national, and European financial tools for SMEs' funding.

Tool	Goal	Funding
REGIONAL¹⁶⁷		
Beteiligungsfonds für kleine und mittlere Unternehmen (SME Investment Fund)	Providing SMEs with economic equity to finance measures of business creation, extension, and follow-on financing	Silent partnership: EURO 50.000 – 1.000.000 Open partnership: max. EURO 100.000 EUR as minority interest up to 20 % of equity
Seed- und Start-Up-Fonds II (Seed and Start-up Fund)	Providing equity capital for spin-offs from universities, research centres, and companies with research, development, and scientific activities as well as for innovative SME start-ups based in Schleswig-Holstein	Silent partnership: in seed phase EURO 50.000 – 200.000; in start-up phase: EURO 50.000 – 350.000; max. EURO 400.000 per company for both phases. Open partnership: max. EURO 100.000 EUR as minority interest up to 25 % of equity

¹⁶³ PROGNOSE (2014), p. 34.

¹⁶⁴ MCN (2015), p. 45.

¹⁶⁵ MCN (2015), p. 34.

¹⁶⁶ MCN (2015), p. 49.

¹⁶⁷ IB.SH (2017), <http://www.ib-sh.de/wirtschaft-technologie/unternehmen-gruenden-oder-uebernehmen>.

Mittelstandsfonds Schleswig-Holstein (SME Fund Schleswig-Holstein) ¹⁶⁸	Providing equity capital for established SMEs for investments, sales growth, equity capital reinforcement, management buy-out and buy-in	EURO 750.000 – 2.000.000
MBG Mittelständische Beteiligungsgesellschaft Schleswig-Holstein mbH (SME Investment Company Schleswig-Holstein)	Strengthening private equity for SMEs and improving conditions for acquiring loan capital	EURO 25.000 – 2.500.000
Investment loan of IB.SH	Co-financing of investments within start-ups, relocations, transfers, expansion and rationalisation measures, reinvestments	Loan, partial investment financing with house bank
Equipment loan of IB.SH	Long-term co- and refinancing of an inventory part (sediment), long-term rescheduling of previously short-term financed investments to reduce the interest rate increase risks, medium-term company needs	Loan
IB.SH growth loan	Investments and liquidity needs for SMEs' growth after successful establishments	Loan: EURO 25.000 – 20.000 with equal participation of the house bank
Start-up and succession in Schleswig-Holstein of IB.SH and BB.SH	Low-interest loans for investments and inventory for start-ups, succession in the first 5 years	Loan: EURO 25.000 – 500.000 80% deficiency guarantee
Innovation loan by IB.SH	Loans for investments and inventory for innovative SMEs	Loan: EURO 100.000 – 3.000.000
Landesprogramm Wirtschaft (LPW) (Federal Programme Economy)	<p>Set of several funding guidelines for SMEs with individual requirements and conditions:</p> <ul style="list-style-type: none"> • Funding applied research, innovations, seminal technologies, and technology and knowledge transfer • Funding operational research, development, and innovation • Funding operational process innovation and organisation innovation • Funding employment of university alumni in small enterprises in Schleswig-Holstein as innovation assistants • Funding internationalisation of SMEs and new market development abroad: consulting, participation in and organisation of international trade fairs and exhibitions • Funding energy revolution and environmental innovation • Funding energetic optimisation of SMEs • Funding and support of cooperation networks and cluster management in Schleswig-Holstein • Funding individual company investment 	

¹⁶⁸ MSH (2017), <http://www.mittelstandsfonds-sh.de>.

NATIONAL¹⁶⁹		
Funding programme of the Federal Office of Economics and Export Control (BAFA) “Innovativer Schiffbau sichert wettbewerbsfähige Arbeitsplätze” (Innovative Shipbuilding Secures Competitive Workplaces) ¹⁷⁰	Subventions for products and processes of German shipyards: innovation measures for shipbuilding, ship renovation and ship conversion for self-propulsion trade ships and offshore structures (particularly SMEs)	Highest possible funding: 25-45% of costs for product innovations and development of innovative processes, 15-50% for application of innovative processes
Research programme of the Federal Ministry for Economic Affairs and Energy „Marine Technologien der nächsten Generation“ (Next Generation Marine Technologies) ¹⁷¹	Funding of new technology development: environmentally friendly drive technologies, innovation production methods for the maritime security, and offshore park maintenance technologies.	Funding: usually 50% of costs within the framework of co-financing
Funding programme for innovative port technologies (IHATEC) ¹⁷²	Support for German ports for research and development of innovative port technologies and cargo handling procedures	Industrial research: 50% of costs Experimental research: 25% of costs
Zentrales Innovationsprogramm Mittelstand (ZIM) (Central SME Innovation Programme)	Research, development, and innovation in SMEs: single projects, cooperation projects, and networks	25 – 55 % of funded costs
CIRR (Commercial Interest Reference Rate) for ship financing	Financial commitment for ship-owners ordering ships at German shipyards	Financial commitment to the effective CIRR, the government bears the interest-change risk
Federal export credit guarantees (Hermes)	Guarantees for exporters fir civil and marine ship transactions	
EUROPEAN¹⁷³		
ERA-Net Cofund MarTERA (Maritime and Marine Technologies for a new Era)	Financial support for collaborative research projects in different areas of maritime and marine technologies	
HORIZONT 2020	Various areas. One of them is equity and venture capital for innovative SMEs	
European Regional Development Fund (ERDF)	See: Regional - Landesprogramm Wirtschaft (LPW) (Federal programme Economy)	

¹⁶⁹ BUNDESREGIERUNG (2017), pp. 14 ff.

¹⁷⁰ BAFA (2017),
http://www.bafa.de/DE/Wirtschafts_Mittelstandsfoerderung/Handwerk_Industrie/Innovativer_Schiffbau/innovativer_schiffbau_node.html.

¹⁷¹ BMWi (2017),
<https://www.bmwi.de/Redaktion/DE/Textsammlungen/Technologie/Schlüsseltechnologien/forschung-entwicklung-innovation-in-der-maritimen-wirtschaft-04.html>

¹⁷² BMVI (2017),
<https://www.bmvi.de/SharedDocs/DE/Pressemitteilungen/2016/148-dobrindt-ihatec-foerderaufufruf.html>.

¹⁷³ BMWi (2017) - II, p. 22.

Table 5: Regional, National, and European Financial Tools for SMEs' Funding

The table shows that there exists a number of funding opportunities for maritime SMEs. In particular, regional offers are well represented and differentiated with a particular accent on start-ups and small companies. In order to analyse their effectiveness for maritime SMEs, the following subchapter provides a detailed analysis of the ERDF funds allocation in the region.

4.3. Allocation of the ERDF Funds in Schleswig-Holstein

In the course of the present regional diagnosis, the operation programme of allocating the funds provided by ERDF for Schleswig-Holstein has been analysed. In the funding period 2014-2020, the ERDF provided Schleswig-Holstein with EUR 271,24 million. Out of these funds, EUR 21,5 million are reserved for the SME Investment Fund, and EUR 6 million for the Seed- and Start-Up Fund II. Thus, the remaining EUR 243,74 million are supposed to be allocated according to the 17 ERDF-funded guidelines of the Federal Programme Economy. The guidelines for SMEs are described in the previous chapter.¹⁷⁴ The structure of the ERDF funds allocation is summarised on Image 13.



Image 13: Structure of the ERDF Funds Allocation in Schleswig-Holstein

Using the list of the projects funded by the Federal Programme Economy,¹⁷⁵ it was possible to identify that EUR 65.136.354 of the ERDF funds 2014-2020 had been allocated according to the guidelines by 01.08.2017. This number was the result of summarising all project eligible expenses multiplied by their respective ERDF co-financing rates. Out of these projects, those belonging to the maritime and renewable energy industries were identified based on the project descriptions provided. Although these industries have much in common and often overlap, they were regarded separately in the course of the analysis. The results show that EUR 4.638.066 were allocated to maritime projects, and EUR 6.667.409 to renewable energy projects, which

¹⁷⁴ LANDESPORTAL SCHLESWIG-HOLSTEIN (2017),

http://www.schleswig-holstein.de/DE/Fachinhalte/F/foerderprogramme/MWAVT/EFRE/efre_inSH_2014_2020.html.

¹⁷⁵ IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

makes about 7% and 10% respectively of all allocated funds.¹⁷⁶ Image 14 provides an illustration of these numbers.

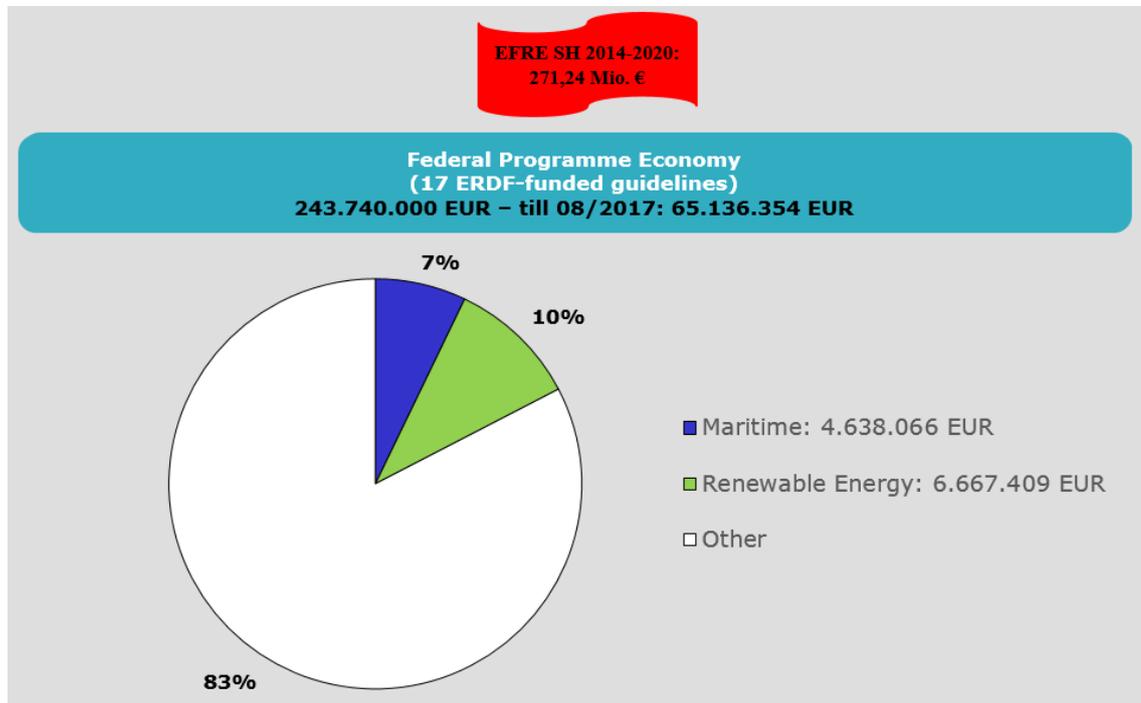


Image 14: ERDF Funds Allocation through the Federal Programme Economy in 2014-2020, Status: 01.08.2017¹⁷⁷

Further, the maritime projects were regarded in detail in the same way. It was stated that about 45,2% of all funds were allocated according to the guideline on funding of applied research, innovations, seminal technologies, and technology and knowledge transfer, about 24% according as subventions for support of cooperation networks and cluster management in Schleswig-Holstein, and about 12,9% as individual holding investment support. The rest of the funds were allocated according to four other guidelines, as Image 15 demonstrates.¹⁷⁸

¹⁷⁶ Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

¹⁷⁷ Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

¹⁷⁸ Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

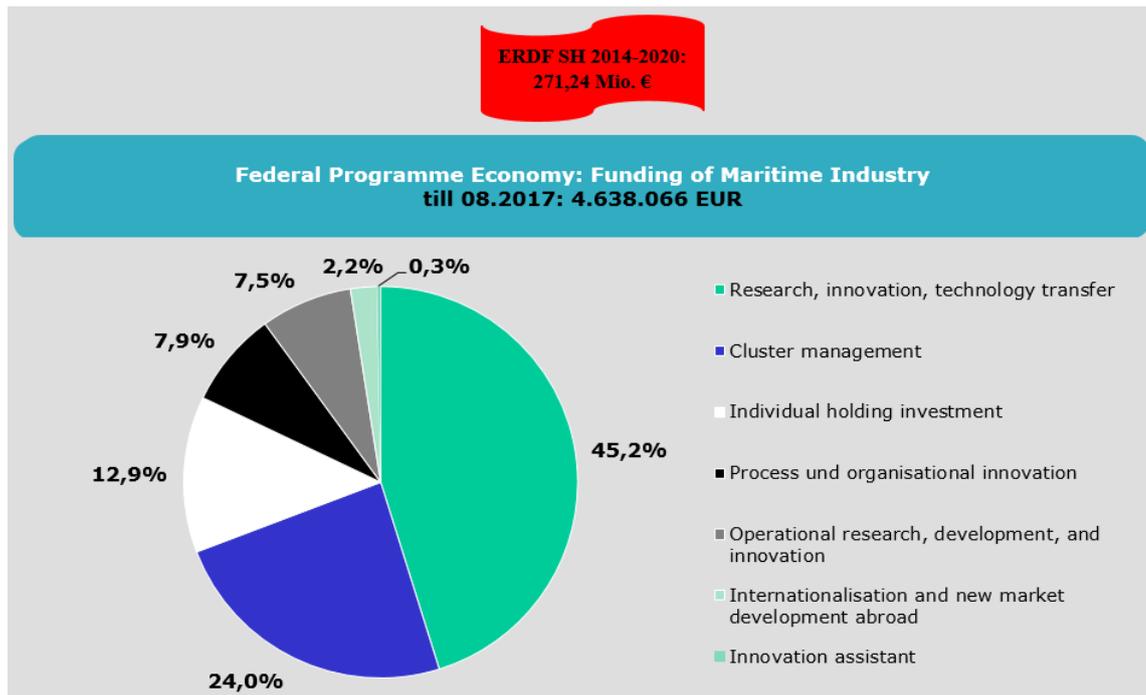


Image 15: ERDF Funds Allocation to the Projects in the Maritime Industry in 2014-2020, Status: 01.08.2017¹⁷⁹

To sum it up, 7% of the ERDF funds provided for Schleswig-Holstein in 2014-2020 were allocated to projects of the maritime industry, and 82% of them were allocated according to the three guidelines: funding of applied research, innovations, seminal technologies, and technology and knowledge transfer, support of cooperation networks and cluster management in Schleswig-Holstein, and individual holding investment support.¹⁸⁰

Further, the analysis of the funded projects has been carried out. According to the list of the projects funded by the Federal Programme Economy,¹⁸¹ ca. 45,2% of the maritime project funding was shared by three projects: National Competence Centre Marine Aquaculture, Institution for Marine Biotechnology by the Competence Centre Fraunhofer, and one university and SME cooperation. Other 24% of the funding were attribute to the Maritime Cluster Northern Germany. Therefore, just about 30,8% of the funding allocated to the maritime industry was directly attributed to SMEs rather than public institutions. These were all together 25 projects, 21 of which trade fair participation according to the guideline on internationalisation and market development abroad. This means that 2,2% of the maritime project funding was split between 72% of all projects. Therefore, the most funded projects by

¹⁷⁹ Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

¹⁸⁰ Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

¹⁸¹ IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

SMEs were relatively small trade fair participation subventions. The overview of these numbers is provided on Image 16.

Federal Programme Economy: Funding of Maritime Industry till 08.2017: 4.638.066 EUR	
Research, innovation, technology transfer 45,2%	<ul style="list-style-type: none"> National Competence Centre Marine Aquaculture Competence Centre Fraunhofer, Institution for Marine Biotechnology Cooperation of a university and an SME
Cooperation networks and cluster management 24%	<ul style="list-style-type: none"> Maritime Cluster Northern Germany (MCN)
Individual holding investment 12,9%	<ul style="list-style-type: none"> SME – Establishment of a business facility (1 project)
Process and organisational innovation 7,9%	<ul style="list-style-type: none"> SME – process innovation, ERP und CRM system (1 project)
Operational research, development, and innovation 7,5%	<ul style="list-style-type: none"> SME – development of a new product family (1 project)
Internationalisation and market development abroad 2,2%	<ul style="list-style-type: none"> SMEs – trade fair participation (21 projects)
Innovation assistant 0,3%	<ul style="list-style-type: none"> SME (1 project)

Image 16: ERDF Funded Maritime Projects in 2014-2020, Status: 01.08.2017¹⁸²

In summary, the analysis in this subchapter has shown that of EUR 271,24 million that are provided for Schleswig-Holstein by the ERDF for the funding period 2014-2020, ca. EUR 65,14 million (ca. 24%) had already been allocated for projects of the Federal Programme Economy by 01.08.2017. 7% of these allocated funds were attributed to the projects in the maritime industry, and only 30,2% of the maritime industry funding reached SMEs directly, most often in the form of relatively small trade fair participation subventions. Thus, there are not many maritime SMEs that benefit from the ERDF funding directly but mostly through research and cooperation development in the region.

4.4. Opportunities for Increasing Risk-Sharing

As described in the previous subchapters, SMEs in Schleswig-Holstein currently have a very limited access to financial support and risk-sharing opportunities. Several studies and statements have already dealt with this issue and suggested new solutions. They are described in the present subchapter.

¹⁸² Own analysis of IB.SH (2017), <https://www.ib-sh.de/die-ibsh/foerderprogramme-des-landes/lpw>, status: 01.08.2017.

4.4.1. Adaptation of SME Funding Programmes

According to the official statement of the IB.SH, Enterprise Europe Network Partner in Schleswig-Holstein, there are some particularities in the way the SMEs in Schleswig-Holstein gain and use European innovation and research project funding, such as HORIZON 2020. These are the following:

- “SMEs in Schleswig-Holstein “only rarely participate in EU-funded research projects.”¹⁸³
- “SMEs do not usually ask for a certain funding scheme but look for support for ideas or projects in various stages of the innovation process.”¹⁸⁴
- “The general structures of EU research and innovation funding are very complex and SMEs usually do not have enough resources to allow them to be aware of and understand all funding possibilities.”¹⁸⁵
- “For SMEs, the administrative burden throughout the entire research project cycle is very high.”¹⁸⁶

It is highly probable that these are the problems preventing companies to apply for EFRE funds within Schleswig-Holstein as well: bureaucracy, time and complexity of the application procedure as well as uncertainty about funding conditions make it difficult for SMEs to benefit from the existing offers. The IB.SH suggests some solutions:

- Funding of shorter, smaller, and more targeted projects for SMEs;¹⁸⁷
- Coordination of national and EU funds, “possibility to receive national funding for a project and continue a follow-up project on the EU level or the other way around.”¹⁸⁸ “However, double-funding and an absence of coordination between these different levels should be avoided.”¹⁸⁹
- “Involvement of industrial associations, explicitly also SMEs and craft trade associations, in the theme-finding process.”¹⁹⁰
- Decreasing administrative burden: applying flat rate calculations, 2-stage proposal submissions, one-stop shop for decentralised / regional support for SMEs, decentralised trainings in proposal writing, shortening time-to-contract etc.¹⁹¹

¹⁸³ IB.SH (2013), p.1.

¹⁸⁴ Ibid.

¹⁸⁵ Ibid., p. 2.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid., pp. 1-7.

¹⁸⁸ Ibid., p. 3.

¹⁸⁹ Ibid., p. 3.

¹⁹⁰ Ibid., p.6.

The applicability of these measures should be proved through workshops and exchange with SMEs.

4.4.2. Loan Securing for Maritime SMEs

According to the results of a potential assessment by DR. HEGENBART & PARTNER (2013), a direct financial support of maritime industry is neither necessary nor macro-economically desirable. In many cases, it would lead to the emergence of economically non-competitive structures. The support should rather consist in creating access to financing for small companies and start-ups as small enterprises' directors and entrepreneurs are often unable to fulfil the bank lending criteria and have insufficient personal securities.¹⁹² Taking into account the economic structure on Schleswig-Holstein, financing problems are predictable: 80,4% of companies have less than 10 employees, 96,4% less than 50 employees.¹⁹³ It is particularly important to create efficient tools for the loan securing through federal state guarantees. Risk capital provision by a new venture capital fund especially for SMEs of maritime industry would significantly facilitate innovation, new product, and market development for these companies.¹⁹⁴

4.4.3. Alternative Funding Solutions

According to the innovation strategy report of the federal state Schleswig-Holstein from 2014, the usage of public funding for company founders should be strengthened by the targeted involvement of private investors.¹⁹⁵ This could be reached by some of the following measures:

- Initiation and revival of a Business Angels and Venture Capital Network Schleswig-Holstein: under the direction of a competent federal institution, such as IB.SH, a network for mediation of investment opportunities in the form of private equity or risk capital (also for joint financing) and for creating contacts between founders and successful, experienced entrepreneurs should be created. It could be done in the framework of a virtual matching process or a business angels' market, where founders and capital and experience providers can meet on the topic-oriented basis. These activities could be connected with those of the Business Angels Netzwerk Deutschland e.V. (BAND) and similar initiatives of the Free and Hanseatic City of Hamburg.¹⁹⁶
- Foundation of an innovation association Schleswig-Holstein: a promising solution of the weak private financing of innovation projects consists in crowdfunding, which is institutionally bound by an innovation association. This institution should acquire

¹⁹¹ Ibid., pp. 1-7.

¹⁹² DR. HEGENBART & PARTNER (2013), p. 10.

¹⁹³ PROGNOSE (2014), p. 32.

¹⁹⁴ DR. HEGENBART & PARTNER (2013), p. 11.

¹⁹⁵ PROGNOSE (2014), p. 124.

¹⁹⁶ Ibid., p. 124.

capital from private persons and use it primarily to finance start-ups in the seed and growth phases. Such approaches are already widespread in SMEs' financing and can be successful even for high-risk projects with respective risk-sharing.¹⁹⁷

- Another alternative might also be crowdfunding. The online platform crowdfunding.de informs interested companies and persons about possible alternative financing opportunities in Germany. For SMEs, the funding models of crowd investing (equity-based crowdfunding) and crowd lending (lending-based crowdfunding) are possible. In case of crowd investing, the supporters receive pre-defined percentages of the future profit. For lending-based crowdfunding, the supporters lend money to project initiators, who will later pay the money back either with or without interests. There are twelve platforms organising targeted SMEs' crowdfunding. However, projects by companies of Schleswig-Holstein's maritime industry have not been found on these platforms yet.¹⁹⁸

4.5. Summary

The present chapter has shown that the current difficult financial situation of the maritime industry in Schleswig-Holstein requires publicly supported funding and risk-sharing opportunities in order to ensure innovative power and development of maritime SMEs. Although there exists a number of regional, national, and European financial support offers, it cannot be told for sure that all SMEs benefit from them. For example, only about 30% of the maritime ERDF funding in Schleswig-Holstein reaches SMEs directly. Besides, the maritime projects have only made 7% of all currently funded projects in Schleswig-Holstein so far. It is suggested that public funding is adapted according to SMEs' needs and loans for particularly small companies are secured by public guarantees. Moreover, opportunities of attracting private capital and its effective bundling with public funds, such as business angels' networks, innovation associations or crowdfunding, should be considered in future. Table 6 provides a summary of good risk-sharing practices in Schleswig-Holstein.

<p>Good Practices – Risk-Sharing</p>	<ul style="list-style-type: none"> • SME Investment Fund • Seed and Start-up Fund • SME Fund Schleswig-Holstein • SME Investment Company Schleswig-Holstein • Loans provided by the Investment Bank Schleswig-Holstein • Federal Programme Economy
---	--

Table 6: Summary of Good Practices for Risk Sharing in Schleswig-Holstein

¹⁹⁷ PROGNOSE (2014), p. 124.

¹⁹⁸ CROWDFUNDING (2017), <https://www.crowdfunding.de/>.

Conclusion

The analysis in the present paper has shown that Schleswig-Holstein has good practices in all four competitiveness levers defined by the project CLIPPER: industrial performance, value chains, internationalisation, and risk sharing. However, there is still some room for improvement in all these areas as well. CLIPPER is one of the initiatives that is supposed to define the necessary measures and to initiate their realisation. The present regional diagnosis provides a summarising overview of Schleswig-Holstein's good practices and should be used for the benchmark and identification of best practices. The concrete actions will be defined through the benchmark with project partners and exchange with local stakeholders. Finally, a detailed action plan will be created and realised.

References

AWI (2017)

The Alfred Wegener Institute for Polar and Marine Research. Retrieved on 31.08.2017, from: <https://www.awi.de>.

BAFA (2017)

Bundesministerium für Wirtschaft und Ausfuhrkontrolle. Retrieved on 31.08.2017, from: <http://www.bafa.de>.

BMBF (2017)

Bundesministerium für Bildung und Forschung: Förderkatalog. Retrieved on 20.12.2017, from: <https://foerderportal.bund.de/foekat/jsp/SucheAction.do>.

BMVi (2017)

Bundesministerium für Verkehr und digitale Infrastruktur. Retrieved on 31.08.2017, from: <http://www.bmwi.de>.

BMWi (2011)

Bundesministerium für Wirtschaft und Technologie: Nationaler Masterplan Maritime Technologien (NMMT): Deutschland, Hochtechnologie-Standort für maritime Technologien zur nachhaltigen Nutzung der Meere. 2011.

BMWi (2017)

Bundesministerium für Wirtschaft und Energie. Retrieved on 31.08.2017, from: <http://www.bmwi.de>.

BMWi (2017) - II

Bundesministerium für Wirtschaft und Energie: Maritime Agenda 2025: Für die Zukunft des maritimen Standorts Deutschland. 2017.

BUNDESREGIERUNG (2017)

Unterrichtung durch die Bundesregierung: Fünfter Bericht der Bundesregierung über die Entwicklung und Zukunftsperspektiven der maritimen Wirtschaft in Deutschland (18. Wahlperiode). 2017.

COSME (2017)

COSME data hub. Retrieved on 31.08.2017, from: <https://cosme.easme-web.eu>.

CROWDFUNDING (2017)

Crowdfunding Informationsportal. Retrieved on 31.08.2017, from:
<https://www.crowdfunding.de>.

EA-SH (2017)

Einheitlicher Ansprechpartner Schleswig-Holstein. Retrieved on 31.08.2017, from:
www.ea-sh.de.

EEK.SH (2017)

Forschungs- und Entwicklungszentrum Fachhochschule Kiel GmbH,
Kompetenzzentrum Erneuerbare Energien und Klimaschutz Schleswig-Holstein.
Retrieved on 31.08.2017, from: <https://www.crowdfunding.de>.

EUROPEAN COMMISSION (2015)

European Commission: COSME-Leaflet. 2015.

EUROPEAN COMMISSION (2017)

European Commission. Retrieved on 31.08.2017, from: <https://ec.europa.eu>.

DR. HEGENBART & PARTNER (2013)

Dr. Hegenbart & Partner (Unternehmensberatung): Fortschreibung der Potenzialanalyse
für die maritime Wirtschaft in Schleswig-Holstein. 2013.

FINO (2017)

Forschungsplattformen in Nord- und Ostsee Nr. 1,2,3. Retrieved on 31.08.2017, from:
<http://www.fino-offshore.de>.

FUE-ZENTRUM (2017)

FuE-Zentrum FH Kiel GmbH (2017). Retrieved on 31.08.2017, from:
<http://www.fh-kiel-gmbh.de>.

FTZ (2017)

Christian-Albrechts-Universität zu Kiel: Forschungs- und Technologiezentrum
Westküste. Retrieved on 31.08.2017, from: <http://www.ftz.uni-kiel.de>.

GEOMAR (2017)

GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel. Retrieved on 31.08.2017,
from: <http://www.geomar.de>.

GMA (2017)

Gesellschaft für Marine Aquakultur (GMA) mbH. Retrieved on 31.08.2017, from:
<http://www.gma-buesum.de>.

GMT (2017)

Gesellschaft für Maritime Technik e.V. Retrieved on 31.08.2017, from:
<http://www.maritime-technik.de>.

HELMHOLTZ-ZENTRUM (2017)

Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH.
Retrieved on 31.08.2017, from: [http:// www.hzg.de](http://www.hzg.de).

HSH NORDBANK (2006)

HSH Nordbank AG: Analysis. Retrieved on 31.08.2017, from: https://www.hsh-nordbank.de/media/pdf_3/investorrelations/ratings/moodys/moodys_report_07122006.pdf.

IB.SH (2013)

Investitionsbank Schleswig-Holstein. Statement of the Investitionsbank Schleswig-Holstein / Germany as Enterprise Europe Network Partner to the Questionnaire for the Green Paper on a Common Strategic Framework for EU Research and Innovation Funding. Retrieved on 03.09.2017, from:
https://ec.europa.eu/research/csfri/index_en.cfm.

IB.SH (2017)

Investitionsbank Schleswig-Holstein. Retrieved on 31.08.2017, from:
<http://www.ib-sh.de>.

IHK24 SCHLESWIG-HOLSTEIN (2017)

IHK24 Schleswig-Holstein: das offizielle Internet-Angebot der Industrie- und Handelskammern zu Flensburg, zu Kiel und zu Lübeck. Retrieved on 31.08.2017, from:
<https://www.ihk-schleswig-holstein.de>.

JAROWINSKY & BALANCE (2005)

Marketing Consulting Michael Jarowinsky, BALance Technology Consulting GmbH: Potentialanalyse für die maritime Wirtschaft in Schleswig-Holstein und in Deutschland. 2005.

JÜLICH (2016)

Forschungszentrum Jülich GmbH: Abschlussbericht: Forschung, Entwicklung und Innovationen: eine Angebots- und Bedarfsanalyse der Institutionen, Strukturen und Netzwerke in der maritimen Wirtschaft. 2016.

LANDESPORTAL SCHLESWIG-HOLSTEIN (2017)

Retrieved on 31.08.2017, from: <https://www.schleswig-holstein.de>.

MENTOREN SH (2017)

Mentoren für Unternehmen in Schleswig-Holstein e. V. Retrieved on 31.08.2017, from: <https://www.mentoren-sh.de>.

MCN (2015)

Maritimes Cluster Norddeutschland: MCN.Strategie 2020: Wettbewerbsfähigkeit durch Innovation und Kooperation. 2015.

MCN (2017)

Maritimes Cluster Norddeutschland e.V. Retrieved on 31.08.2017, from: <http://www.maritimes-cluster.de>.

MSH (2017)

Mittelstandsfonds Schleswig-Holstein GmbH (MSH). Retrieved on 31.08.2017, from: <http://www.mittelstandsfonds-sh.de>.

PROGNOS (2014)

Forschungszentrum Prognos: Strategiebericht: Regionale Innovationsstrategie Schleswig-Holstein - Weg zu einer intelligenten Spezialisierung. 2014.

STATISTISCHES AMT (2017)

Statistisches Amt für Hamburg und Schleswig-Holstein: Gewerbeanzeigen in Schleswig-Holstein 2016. 2017.

STATISTISCHES AMT (2017) - II

Statistisches Amt für Hamburg und Schleswig-Holstein. Retrieved on 14.12.2017, from: www.statistik-nord.de

VDMA (2017)

Verband Deutscher Maschinen- und Anlagenbau e.V. Retrieved on 31.08.2017, from:
<https://mes.vdma.org>.

VDR (2017)

Verband Deutscher Reeder. Retrieved on 31.08.2017, from:
<http://www.reederverband.de>.

VSM (2017)

Verband für Schiffbau und Meerestechnik e.V.. Retrieved on 31.08.2017, from:
<http://www.vsm.de>.

WINDCOMM (2017)

windcomm schleswig-holstein e. V. Retrieved on 06.09.2017, from:
<http://www.windcomm-sh.de>.

WIRTSCHAFTSMINISTERIUM (2013)

Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein: Maritimer Aktionsplan Schleswig-Holstein: mehr Wirtschaft. 2013.

WIRTSCHAFTSMINISTERIUM (2016)

Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein: Existenzgründungen in Schleswig-Holstein: Daten, Fakten, und Fördermöglichkeiten. 2016.

WT.SH (2017)

Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH (WT.SH). Retrieved on 31.08.2017, from: <https://wtsh.de>.

WT.SH (2017) – II.

Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH (WT.SH) – Business Development and Technology Transfer Corporation of Schleswig-Holstein: For Visionary Entrepreneurs: The Business Location Schleswig-Holstein. 2017.

ZDS (2017)

Zentralverband der deutschen Seehafenbetriebe e.V.. Retrieved on 31.08.2017, from:
<http://www.zds-seehafen.de>.