IKZM Oder

Forschung für ein Integriertes Küstenzonenmanagement in der Odermündungsregion

IKZM-Oder Berichte 44 (2008)

Guiding the coast - Development of guidelines for Integrated Coastal Zone Management in Germany

Autor: Tim Nandelstädt

Institut für Landschaftsarchitektur und Umweltplanung, Technische Universität Berlin
ISSN 1614-5968

IKZM-Oder Berichte

44 (2008)

GUIDING THE COAST

-

DEVELOPMENT OF GUIDELINES FOR INTEGRATED COASTAL ZONE MANAGEMENT IN GERMANY

von

Tim Nandelstädt

Technische Universität Berlin
Institut für Landschaftsarchitektur und Umweltplanung
Straße des 17. Juni 145, 10623 Berlin

Berlin, März 2008

Diploma Thesis in Landscape Planning

Technical University Berlin; Germany

March 2008

1st examiner:

Prof. Dr. Johannes Küchler
Dept. of Landscape Architecture and Environmental Planning
Technical University Berlin
Franklinstr. 28/29
10587 Berlin
Germany
Phone: +49-(0)30-31473334
Email:
kuechler@imup.tu-berlin.de

2nd examiner:

Prof. Dr. Martin Welp
Faculty of Forest and Environment
University of Applied Sciences Eberswalde
Alfred-Möller-Str. 1
16225 Eberswalde
Germany
Phone: +49-(0)3334-65483
Email:
martin.welp@fh-eberswalde.de

In collaboration with:

Dr. Gerald Schernewski
Baltic Sea Research Institute IOW
and
EUCC - The Coastal Union
Seestrasse 15
18119 Rostock
Germany
Phone: +49-(0)381-5197211
Email:
gerald.schernewski@io-warnemuende.de

Impressum

Die IKZM-Oder Berichte erscheinen in unregelmäßiger Folge. Sie enthalten Ergebnisse des Projektes IKZM-Oder und der Regionalen Agenda 21 “Stettiner Haff – Region zweier Nationen” sowie Arbeiten mit Bezug zur Odermündungsregion. Die Berichte erscheinen in der Regel ausschließlich als abrufbare und herunterladbare PDF-Files im Internet.

Bundesministerium für Bildung und Forschung

Das Projekt “Forschung für ein Integriertes Küstenzonenmanagement in der Odermündungsregion (IKZM-Oder III)” wird vom Bundesministerium für Bildung und Forschung gefördert.

Die Regionale Agenda 21 “Stettiner Haff – Region zweier Nationen” stellt eine deutsch-polnische Kooperation mit dem Ziel der nachhaltigen Entwicklung dar. Die regionale Agenda 21 ist Träger des integrierten Küstenzonenmanagements und wird durch das Projekt IKZM-Oder unterstützt.

Herausgeber der Zeitschrift:
EUCC – Die Küsten Union Deutschland e.V.
Poststr. 6, 18119 Rostock, http://www.eucc-d.de/
Dr. G. Schernewski & N. Stybel

Die IKZM-Oder Berichte sind abrufbar unter http://ikzm-oder.de/ und http://www.agenda21-oder.de/

ISSN 1614-5968

Acknowledgements

The extensiveness and quality of this study could not have been reached without the immense help and support of numerous people. Therefore, I would like to express my special appreciation to the following persons:

Prof. Dr. Johannes Küchler (Technical University Berlin, Department of Landscape Architecture and Environmental Planning) for his supervision, guidance, support, criticism, and time during the entire phase of thesis writing. I remain grateful for an extensive initiating conversation, which assisted me to arrive at ICZM. Furthermore I am thankful for giving me a lot of academic freedom, which enabled me to conduct a research of my passion.

Prof. Dr. Martin Welp (University of Applied Sciences Eberswalde, Faculty of Forest and Environment) for his vital inputs and comments to my work.

Dr. Gerald Schernewski (Baltic Sea Research Institute IOW and EUCC – The Coastal Union) for his enthusiastic and expert guidance, his critical comments for all drafts of this thesis, his patience explaining me the fundamentals of ICZM, the provision of a workstation at IOW and EUCC, and not to forget his efforts to involve me and my work in the actual scientific debate on ICZM.

The employees of IOW and EUCC in Warnemünde who actively supported and accompanied my work and provided me an excellent working atmosphere. In particular, I am grateful to Holger Janßen for his elaborated explanations and amicable discussions, Nardine Löser for her fair-minded comments on 'ICZM-Oder estuary', Stefanie Maack for profitable discussions, and the creation of the probably most relaxed interview atmosphere with two beers on the beach, Ramona Thamm and Stefan Bock for their support.

Timo Fichtner (University of Applied Sciences Neubrandenburg) for his detailed, precise, and clear comments on 'ICZM-Oder estuary' and reviews of my results. Furthermore, I gratefully acknowledge the fruitful change of ideas concerning the German ICZM process.

Astrid Dickow and Frank Liebrenz (Ministry of the Interior Schleswig-Holstein) for their constructive comments on my results. Their input especially helped me to design the structure of the Coordination Points.

Andreas Kannen (GKSS Research Centre Geesthacht) for his very obliging offering and realisation to review my results despite his busy schedule.

Bastian Schuchardt (Bio Consult Bremen) for his precise comments on the results of the gap analysis.

Heike Holzfuß (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) for her non-bureaucratic and friendly manner involving me in the latest ICZM debate in Germany.

Frank van der Meulen (UNESCO-IHE and RIKZ) for his time discussing my thesis proposal and his fundamental input defining further design and actions of my research.

All interview participants for their voluntary assistance and extended responses, namely Frank Ahlhorn (University Oldenburg), Arno Boomert (Boomert Business Coaching), Maart ten Braak and Tiny Maenhout (Municipality of Sluis), Clivia Haese (GKSS Research Centre Geesthacht), Mathias Hamann (Ministry of the Interior Schleswig-Holstein), Gescha Krause (Rupprecht Consult Cologne), Jens Riemer (Office for Rural Areas Schleswig-Holstein), and Roland Wenk (Agency for regional and spatial planning Mecklenburg-Western Pomerania).

My family, especially my parents, for their love and patience and not to forget their financial support. They enabled und supported me to follow my passions and interests, which did not always refer directly to my studies.

My friends for giving me support during the time of research and writing. I remain grateful for their successful performance of a balance act. That means they managed to leave me working when it was possible, and to get me out when it was necessary. In particular, I want to thank Torben Reelfs for his extensive efforts to comment and discuss all draft versions of this work (also via internet from sub-Saharan Africa), Tilia Maas Geesteranus for her professional input and her love, Andreas Kroll for the many refreshing walks and reflective thoughts, Christina Passing for her proof-reading, Philip Hansmann for his assistance with the form layout, and all Buttmann-Hippies for the delicious meals on Mondays.

Table of contents

List of illustrations

Boxes

Figures

Tables

List of abbreviations

ALR	'*Amt für ländliche Räume Schleswig-Holstein*' (Office for Rural Areas Schleswig-Holstein)
AM-MV	'*Ministerium für Arbeit, Bau und Landesentwicklung Mecklenburg-Vorpommern*' (Ministry for Employment, Transport, Building, and Landscape Development Mecklenburg-Western Pomerania)
ASTRA	Developing Policies & Adaptation Strategies to Climate Change in the Baltic Sea Region
BMBF	'*Bundesministerium für Bildung und Forschung*' (German Federal Ministry of Education and Research)
BMU	'*Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit'* (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
BMVBS	'*Bundesministerium für Verkehr, Bau und Stadtentwicklung*' (German Federal Ministry of Transport, Building and Urban Affairs)
CM	Coastal Management
CZMC	Coastal Zone Management Centre of the Netherlands
DEFRA	Department for Environment Food and Rural Affairs of the United Kingdom
DOENI	Department of the Environment Northern Ireland
EFF	European Fisheries Fund
EU	European Union
EUCC	The Coastal Union (formerly European Union for Coastal Conservation)
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FOD	'*Federale Overheidsdienst Volksgezondheit, Veiligheid van de Voedselketen en Leefmilieu, België'* (Federal Public Service for Health, Food Chain Safety and Environment of Belgium)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environment Protection
GGA	'*Gebieds Gerichte Aanpak*' (Region Directed Approach)
GIS	Geographic Information System
ICAM	Integrated Coastal Area Management
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
IKZM	'*Integriertes Küstenzonenmanagement*' (Integrated Coastal Zone Management)
IM-SH	'*Innenministerium Schleswig-Holstein'* (Ministry of the Interior Schleswig-Holstein)
IMCAM	Integrated Marine and Coastal Area Management
INTERREG	European community initiative, which aims at stimulating interregional cooperation

IOW	'*Institut für Ostseeforschung Warnemünde*' (Baltic Sea Research Institute Warnemünde)
IPCC	Intergovernmental Panel on Climate Change of the United Nations
IUCN	International Union for the Conservation of Nature and Natural Resources
LOICZ	Land–Ocean Interactions in the Coastal Zone
LU-MV	'*Ministerium für Landwirtschaft, Umwelt und Verbraucherschutz Mecklenburg-Vorpommern*' (Ministry of Agriculture, Environment and Consumer Protection Mecklenburg-Western Pomerania)
Maya	Marina and Yachting in the Lower North Sea, the Channel Area and the Irish Sea
ML-NDS	‚*Niedersächsisches Ministerium für den Ländlichen Raum, Ernährung, Landwirtschaft und Verbraucherschutz*' (Lower Saxony Ministry for Rural Areas, Food, Agriculture and Consumer Protection)
MLR	'*Ministerium für Ländliche Räume, Landwirtschaft, Landesplanung und Tourismus Schleswig-Holstein*' (Ministry of Rural Areas, Agriculture, Regional Planning and Tourism Schleswig-Holstein)
MSL	Mean sea level
NOAA	National Oceanic and Atmospheric Administration of the USA
NOKIS	'*Nord- und Ostsee-KüstenInformationsSystem*' (Coastal Information System of North- and Baltic Sea)
RIKZ	'*Rijksinstituut voor Kust en Zee*' (Dutch National Institute for Coastal and Marine Management)
ROKK	'*Raumordnungskonzept für das niedersächsische Küstenmeer*' (Spatial Planning Concept for Coastal Waters of Lower Saxony)
S.A.I.L.	'*Schéma d'Aménagement Intégré du Litoral*' (Scheme of Integrated Coastal Zone Management)
SMP	Shoreline Management Plan
SPICOSA	Science and Policy Integration for Coastal Systems Assessment
SustAccess	Sustainable Accessibility between Hinterlands and Gateways around the North Sea
SWOT	Strengths-Weaknesses-Opportunities-Threats
UK	United Kingdom
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-IHE	United Nations Educational, Scientific and Cultural Organization – Institute for Water Education
VLIZ	'*Vlaams Instituut voor de Zee België*' (Flanders Marine Institute Belgium)
WFD	Water Framework Directive
WG	Working group
WG-ID	European Working Group on Indicators and Data

Summary

Coastal ecosystems are one of the most productive natural systems in the world. They face many threats induced by humans such as sea-level-rise, deposition of agricultural and industrial substances, overfishing, as well as tourism- and infrastructure development. As a consequence, approximately 70% of the European coastal ecosystems are highly threatened respecting their biological productivity. This is the highest percentage of any eco-region in the world.

Recognizing these threats, the European Parliament and Council released in 2002 the recommendation '2002/413/EC' to develop and implement Integrated Coastal Zone Management (ICZM) in Europe. All EU member states were requested to develop national ICZM strategies until 2006. The response of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety ('*Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit'*; BMU) has been to publish an ICZM strategy in March 2006. But the ICZM process in Germany still contains significant gaps. In particular, it is not clarified adequately how to implement formally ICZM in the German legal system, and how to execute ICZM at the regional and local level.

The objective of this thesis was to develop guidelines for ICZM in Germany in order to reduce or eliminate the weaknesses mentioned above and enhance the German ICZM process. To arrive at these guidelines, research questions on major gaps, assessments of foreign ICZM strategies, evaluations of local ICZM projects, and formulations of guidelines were addressed. First, a gap analysis was conducted to identify and quantify the gaps of the German ICZM process. Thereupon, both a top-down and a bottom-up approach were performed. The top-down approach derived lessons learned for the formal implementation of ICZM in Germany from ICZM strategies of Belgium, The Netherlands, and the United Kingdom. The bottom-up approach examined three regional/local ICZM projects and extracted best practice experiences for the German ICZM process. On the basis of all findings, guidelines for the German ICZM process were developed.

The gap analysis showed that the German ICZM process contains two major deficits. First, the formal implementation is fuzzy. This means that it is not sufficiently evident at which administrative level the principles of ICZM should be integrated in the existing legal frameworks. Furthermore, responsibilities and tasks are not addressed adequately. Second, sufficient local and regional best-practice experiences and knowledge transfer are lacking. This especially relates to systematic instructions for practitioners in order to execute ICZM at regional/local level.

The findings of the bottom-up and top-down approach were use to develop ICZM guidelines. They were formulated according to the various German administrative levels (local/regional, federal state, national). Five guidelines were developed for the regional and local level: problem recognition and definition, identification of preconditions, preparation of a plan/strategy, execution of measures and evaluation. These guidelines constitute a stepwise guidance to execute ICZM: They are presented in form of a so called 'five-step scheme'. It divides the regional ICZM process into five steps. For each step specified actions to be taken are defined. It is intended that the 'five-step scheme' provides a basis for organising and executing regional ICZM activities along Germany's coasts. One guideline has been formulated for the federal state level. It aims at coordinating regional ICZM activities and (supra-) national policy by the establishment of three ICZM Coordination Points. At the national level three guidelines focus on monitoring and evaluation of a nationwide ICZM process: definition of overall targets for the German coastal zone, establishment of indicators, and considering ICZM as engine for paradigm shift of spatial planning.

In particular two findings of the present study are worth discussing. First, the five-step scheme faces some limitations. Under real-world conditions, various ICZM activities can not be separated from each other as sharply as depicted by the five-step scheme. In reality their transitions are rather smooth. The operation of an ICZM initiative is usually not realised step-by-step as shown in the conceptual scheme. Moreover, different steps start at the same time, overlap, or are executed parallel to each other. Second, the requirement of the BMU avoiding the development of new ICZM structures (such as institutions and working places) could not be satisfied. The present study discussed that this requirement cannot be achieved since the establishment of three Coordination Points would lead to new institutions with new work volumes.

To conclude, this study provides a procedural proposal (especially in the formulated guidelines) to enhance the ICZM process in Germany. The five-step scheme forms an innovation for the German ICZM process. It constitutes an applicable instruction, which allows a systematically execution of regional ICZM. It could serve as a basis for a future 'handbook of good ICZM' for practitioners at the local and regional level. Moreover, the author hopes that the five-step scheme developed will also be of use at the European level. For the first time, a detailed structure and organisation of an ICZM Coordination Point for Mecklenburg-Western Pomerania has been developed. This Coordination Point holds the potential to function as an exemplary model for other German coastal federal states.

Zusammenfassung

Küstenökosysteme gehören zu den produktivsten naturnahen Ökosystemen der Welt. Dabei sind sie vielfachen menschlich induzierten Gefährdungen ausgesetzt, wie zum Beispiel Meeresspiegelanstieg, Stoffeinträge aus Landwirtschaft und Industrie, Überfischung, Tourismusentwicklung und Bebauung der Küstenzone. Als Folge sind schätzungsweise 70% der Europäischen Küsten in Bezug auf ihre hohe biologische Produktivität stark gefährdet. Das stellt den weltweit höchsten Gefährdungsgrad von naturnahen Ökosystemen dar.

Im Jahr 2002 reagierten das Europäische Parlament und der Europäische Rat mit der Empfehlung ‚2002/413/EC' zur Umsetzung einer Strategie für ein Integriertes Küstenzonenmanagement (IKZM) in Europa darauf. Alle Mitgliedsstaaten der EU waren aufgefordert bis 2006 eigene nationale IKZM Strategien zu entwickeln. Das deutsche Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) kam dieser Forderung mit der Verabschiedung einer nationalen IKZM Strategie im März 2006 nach. Trotzdem weist der IKZM Prozess in Deutschland Schwächen auf. Besonders im Hinblick auf die formale Einführung von IKZM und dessen praktische Umsetzung gibt es Unklarheiten.

Das Ziel dieser Arbeit war deshalb die Entwicklung von IKZM Richtlinien für Deutschland um diese genannten Unklarheiten zu beseitigen und den deutschen IKZM Prozess zu fördern. Dazu wurden Forschungsfragen zu den Schwächen des deutschen IKZM Prozesses, Erkenntnissen aus ausländischen IKZM Strategien, Erfahrungen aus regionalen IKZM Projekten und zur Formulierung von Richtlinien für Deutschland aufgestellt. Mit der Durchführung einer Lückenanalyse konnten die Schwächen des deutschen IKZM Prozesses identifiziert und quantifiziert werden. Eine Top-Down Methode ermöglichte das Ableiten von positiven und negativen Erfahrungen zur Implementierung aus den IKZM Strategien Belgiens, den Niederlanden und Großbritanniens. Im Rahmen einer Bottom-Up Methode wurden drei regionale IKZM Projekte untersucht und deren praktische Erfahrungen herausgearbeitet. Anhand der gewonnenen Ergebnisse wurden Richtlinien für IKZM in Deutschland entwickelt.

Die Lückenanalyse hat zum Ergebnis, dass der deutsche IKZM Prozess hauptsächlich zwei Schwächen aufweist. Erstens ist es unklar, wie und wo IKZM formal eingeführt werden kann. Es ist noch nicht ausreichend geklärt, auf welcher administrativen Ebene die IKZM Prinzipien in den bestehenden gesetzlichen Rahmen integriert werden. Dabei ist insbesondere nicht klar, welche Institutionen und Personen die Verantwortung tragen, beziehungsweise welche Aufgaben sie zu erfüllen haben. Zweitens gibt es einen Mangel an bewährten IKZM Praxiserfahrungen und Wissenstransfer. Es fehlt eine systematische und anwendbare IKZM Anleitungshilfe für lokale und regionale Praktiker.

Die Ergebnisse der Top-Down- und Bottom-Up Methode finden sich in den IKZM Richtlinien wieder, welche für die verschiedenen deutschen Ebenen (Gemeinde/Region, Land, Bund) formuliert wurden. Für die regionale Ebene konnten fünf Richtlinien entwickelt werden: Problemerkennung und –definition, Identifikation von Vorbedingungen, Erstellung eines Plans/einer Strategie, Durchführung von Maßnahmen, Evaluation. Sie stellen eine schrittweise Anleitungshilfe für die Organisation und Durchführung von regionalen IKZM Aktivitäten an Deutschlands Küsten dar. Diese fünf anzustrebenden Aktivitäten wurden im Rahmen eines ‚Fünf Schritte Modells' vorgestellt. Dieses Modell teilt den regionalen IKZM Prozess in fünf Schritte ein und definiert für jeden dieser Schritte bestimmte Vorgehensweisen. Für die Landesebene wurde eine Richtlinie zur Einrichtung von drei IKZM Koordinierungsstellen formuliert. Diese haben zur Aufgabe regionale IKZM Initiativen und (inter-) nationale Politik zu koordinieren. Die drei Richtlinien für die Bundesebene (Definition von Leitzielen für die deutschen Küstenzonen, Etablierung von Indikatoren und IKZM als Motor für einen Paradigmenwechsel in der Raumplanung) konzentrieren sich im Wesentlichen auf die Beobachtung, Bewertung und Steuerung des deutschlandweiten IKZM Prozesses.

Insbesondere zwei Ergebnisse der vorliegenden Arbeit bleiben diskussionswürdig. Erstens weist das ‚Fünf Schritte Modell' einige Einschränkungen auf. Die realen IKZM Aktivitäten können nicht so scharf voneinander getrennt werden, wie es die fünf Schritte des Modells suggerieren. In der Realität sind ihre Übergänge vielmehr fließend. Verschiedene Schritte können sich überlappen oder werden parallel zueinander durchgeführt. Zweitens konnte der Forderung des BMU, keine neuen Strukturen wie zum Beispiel einer separaten Verwaltung mit neuen Arbeitsplätzen aufzubauen, nicht nachgekommen werden. Die Einrichtung von drei IKZM Koordinierungsstellen würde zwangsläufig zu neuen Arbeitsvolumen führen.

Es kann gefolgert werden, dass die Ergebnisse (insbesondere die Richtlinien) der vorliegenden Arbeit einen praktikablen und systematischen Vorschlag darstellen, den IKZM Prozess in Deutschland zu fördern und zu verbessern. Dabei stellt das ‚Fünf Schritte Modell' eine Neuerung für den deutschen IKZM Prozess dar. Es versteht sich als eine detaillierte methodische Anleitung für die praktische Durchführung von IKZM Initiativen auf regionaler und lokaler Ebene. Diese Anleitung könnte die Grundlage für ein ‚Handbuch des gutes IKZM' für deutsche Praktiker bilden. Es bleibt zu hoffen, dass das Vorgehen nach dem ‚Fünf Schritte Modell' sich auch bei IKZM Initiativen außerhalb von Deutschland als sinnvoll erweist. Weiterhin konnte innerhalb dieser Arbeit zum ersten Mal die Struktur und Organisation einer IKZM Koordinierungsstelle für Mecklenburg-Vorpommern dargestellt werden. Diese Konstruktion hat das Potenzial als beispielhaftes Modell für die anderen Küstenbundesländer Deutschlands zu fungieren.

1. Introduction

Coastal ecosystems are one of the most productive natural systems in the world (European Environmental Agency, 2006). They provide a wide range of services to human beings: "*provisioning services*" such as food supply, fuel wood, energy resources, "*regulating services*" such as shoreline stabilization, flood prevention, storm protection, hydrological services, nutrient regulation, "*cultural and amenity services*" such as culture, tourism, recreation and "*supporting services*" such as habitat provision, nutrient cycling, primary productivity (UNEP, 2006). These services are of high ecological, social and economic value (Costanza et al., 1997), not only to local communities living in the coastal zone but also to national economies and global trade.

Several threats on coastal systems are discussed in the literature. A good overview is given by Crossland et al. (2005) and Turner at al. (1996). Further publications refer to the most important threats which are industrialisation and urbanisation (see Ductroy and Pullen, 1999; Jickells, 1998), sea-level-rise (see IPCC, 2007; Nicholls and Klein, 2005; Syvitski et al., 2005), increase of carbon dioxide and greenhouse gases (see IPCC, 2007; Pacyna and Hov, 2002), deposition of agricultural substances (see Scialabba, 1998; Vitousek et al., 1997), fisheries and aquaculture development (see Caddya and Cochrane, 2001; Goni, 1998; Pauly et al., 1998), as well as development of tourism and infrastructure (see Gormsen, 1997; Sarda et al., 2005). As a consequence, approximately 70% of the European coastal ecosystems are highly threatened respecting their biological productivity. This is the highest percentage of any eco-region in the world (EUCC, 2006).

Integrated Coastal Zone Management (ICZM) is a widely accepted approach to tackle these coastal problems (see Beatley et al., 2002; Cicin-Sain and Knecht, 1998; Clark, 1995; Kay and Alder, 1999; Vermaat et al., 2005). Since the study at hand can be placed in the framework of ICZM, it becomes necessary to define the term and briefly describe its state-of-the-art first. Thereupon follows the problem statement, the objective of the study, and the research questions.

1.1 Definition of ICZM

ICZM is also known under a variety of different names such as Integrated Coastal Area Management (ICAM), Integrated Coastal Management (ICM), and Integrated Marine and Coastal Area Management (IMCAM).

Although there are many different definitions of ICZM (see FAO, 1992; GESAMP, 1996; IUCN, 1993; LOICZ, 2005; NOAA, 1972; Post and Lundin, 1996; UNEP, 1995) the actual

differences amongst them are minor. Most definitions recognise that ICZM is a dynamic, continuous, and iterative process designed to promote sustainable management of coastal zones. Most definitions have in common that the goals of ICZM have to be achieved within the constraints of physical, social, economic, and environmental conditions, as well as within the constraints of legal, financial, and administrative systems and institutions.

Since this study is situated in the European Union (EU), the definition of the European Commission (2000) is best suitable: "*Integrated Coastal Zone Management (ICZM) is a dynamic, multi-disciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision-making, management, and monitoring of implementation. ICZM uses the informed participation and co-operation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space*."

1.2 State-of-the-art in Europe

The importance of ICZM at the European supranational level has increased. This is one of the conclusions arrived at by Shipman and Stojanovic (2007) taking the growth of ICZM related text books, training courses and scientific convergence concerning key principles as indicators.

The first ICZM action at European supranational level formed the so called 'Demonstration Programme on Integrated Coastal Zone Management' from 1996 to 1999. The Program featured 35 projects and six thematic studies. It was aimed to provide technical information about sustainable Coastal Zone Management, and to stimulate a broad debate among the various actors involved in the planning, management or use of European coastal zones (European Commission, 1999a). In September 2000, based on the experiences and outputs of the Demonstration Programme, the Commission adopted 'Integrated Coastal Zone Management: A strategy for Europe' (see European Commission, 2000). The most significant progress at the EU level has been made with the adoption of the 'Recommendations Concerning the Implementation of Integrated Coastal Zone Management in Europe' (European Parliament and Council, 2002) in May 2002. Therein the EU requested its member states to conduct national stocktakings and develop national ICZM strategies by 2006.

Rupprecht Consult and International Ocean Institute (2006) conducted an evaluation to which extent the EU members have implemented the principles of good ICZM as mentioned by the European Parliament and Council (2002). As a result of the study no country has implemented a national ICZM strategy as prompted by the EU. In seven countries the implementation of an ICZM strategy is pending. In six further countries documents considered as equivalent to an ICZM strategy have been developed, or strategies have become an integral part of national spatial planning processes. In eleven countries no ICZM equivalent policies are in an advanced stage of preparation.

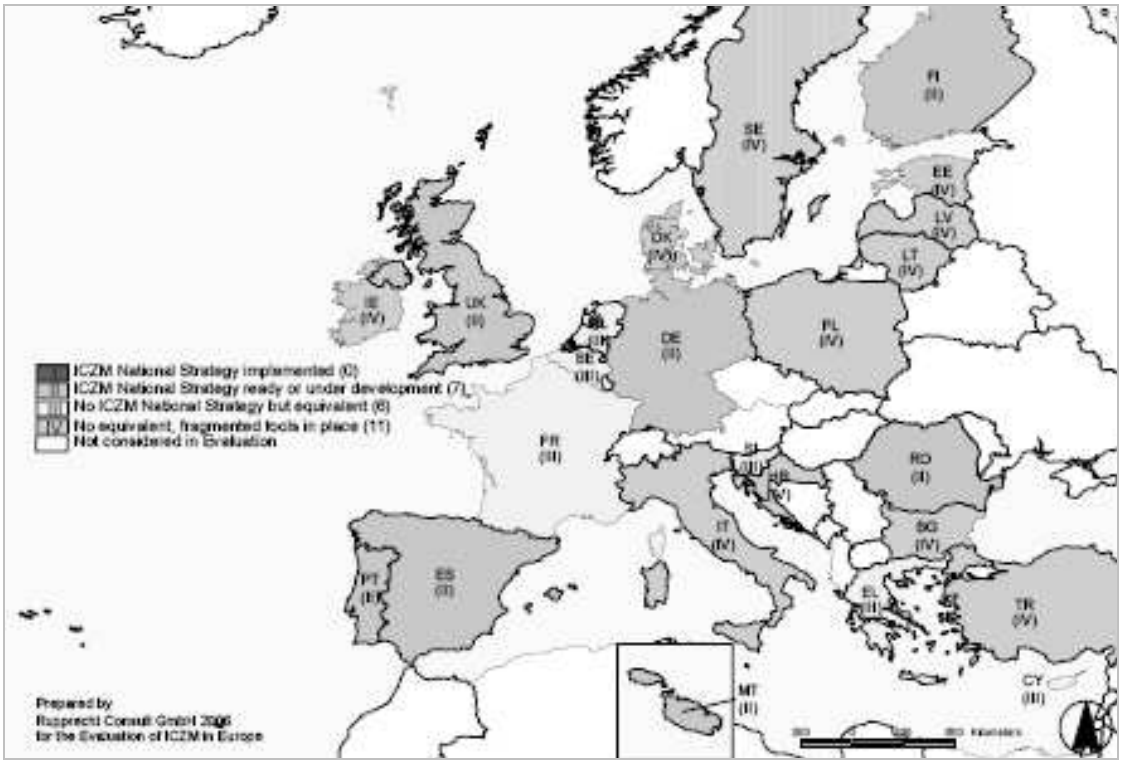

Figure 1: State of implementation of ICZM strategies in Europe (adapted from Rupprecht Consult and International Ocean Institute, 2006)

The most recent development on the field of ICZM was the release of the so called Blue Book 'An Integrated Maritime Policy for the European Union' (European Commission, 2007b) in October 2007. Even though it is not focusing on the coast mainly but on the ocean, it marks a milestone in promoting the ICZM idea by stating: "*Member States have begun to use ICZM to regulate the spatial development of economic activities and to set up spatial planning systems for Europe's coastal waters. Both these instruments contribute to meeting the commitments deriving from the Thematic Strategy for the Protection of the Marine Environment and provide operators with improved predictability for their planning of future investments. A system for exchange of best practice among authorities engaged in maritime spatial planning and ICZM will be set up*" (ibid.).

1.3 State-of-the-art in Germany

Germany does not have one defined national law for ICZM. Far more than 30 laws, regulations, and directives have relevance to the coastal zone. The laws usually meet specific, sectoral requirements (Schernewski, 2002). The responsibility of ICZM at the national level lies by the BMU, but with competitive sectoral planning (such as spatial planning) by the Federal Ministry of Transport, Building and Urban Affairs ('*Bundesministerium für Verkehr, Bau und Stadtentwicklung*', BMVBS). At the federal state level[1], the spatial planning agencies ('*Landesraumordnungsbehörden*') are responsible for ICZM. In general, the federal states bear the main responsibilities for coastal management. Altogether, three federal states share the German coastal zone: Lower Saxony ('*Niedersachsen*'), Mecklenburg-Western Pomerania ('*Mecklenburg-Vorpommern'*) and Schleswig-Holstein as well as the two city-states Hamburg and Bremen. In this well developed, hierarchically designed spatial planning system, several integrated aspects of ICZM are implemented. Most important in this respect are the legal binding regional planning programmes ('*Landesprogramm/Regionalplan'*) prepared by state regional planning authorities for every federal state or region.

By reason of their great responsibility, the federal states of Germany implemented ICZM aspects in different ways and to a different extent. Lower Saxony works with priority on missing regulations for the coastal waters (12 sea mile zone) by formulating a 'Spatial Planning Concept for Coastal Waters' ('*Raumordnungskonzept für das niedersächsische Küstenmeer*'; ROKK). The concept falls short in terms of integrative approaches and precise management guidance (Melzer and Fahrenkrug, 2004). Mecklenburg-Western Pomerania focuses on the results of national and supranational ICZM activities such as 'HELCOM' (see 'www.helcom.fi') and 'ICZM-Oder' (see 'www.ikzm-oder.de') and develops ICZM approaches by means of their experiences. Some principles of ICZM were taken-up in the Federal Development Plan ('*Landesraumentwicklungsprogramm*') (see AM-MV, 2005). Schleswig-Holstein takes a leadership role in Germany. They have developed their own ICZM strategy already in 2003 (see IM-SH, 2003), reasoning that Schleswig-Holstein is stronger influenced by the sea than any other federal state in Germany. The strategy emphasises integrative approach and management. The federal state defines its responsibility in terms of allocation of information and coordination of the ICZM process.

Since the prompt of the EU to develop national strategies in all EU countries, ICZM also plays an important role at the national level in Germany. In 2006 the German BMU published a framework called 'Integrated Coastal Zone Management in Germany – A national strategy for

[1] Germany is a federal republic made up of 16 federal states, named in German as *'Länder'*. Each *'Land'* consists of several regions and municipalities. In the course of this study the English terms will be used, thus federal republic (national level), federal state (federal level), region (regional level) and municipality (local level).

ICZM' (BMU, 2006). Therein, ICZM is defined as an "*informal approach to support sustainable development of coastal zones through good integration, coordination, communication, and participation. On the one hand, ICZM is a process that should permeate all planning and decision-planning levels as a guiding principle. On the other hand, it is as a tool for identification of potential development and for resolving conflicts in a non bureaucratic manner*" (BMU, 2006). Thus, ICZM should become an overall concept for all coastal planning and decisions without being an independent tool and without building up new structures (ibid.). Recently it is tried to bridge knowledge gaps by regular meetings of a national ICZM working group and by two national ICZM reference projects: 'ICZM-Oder' and 'Coastal Futures' (see Chapter 1.4).

1.4 State-of-the-art on regional/local level[2]

Through the EU Demonstration Programme on ICZM (European Commission, 1999a; European Commission, 1999b) the initiation and execution of local and regional ICZM activities was brought forward. Four projects among the Baltic Sea and five among the North Sea coast were initiated.

Nowadays there are some ICZM activities running at regional and at local levels. According to Dickow (2007) they can be subdivided into ICZM studies and ICZM projects, by what their transition is smooth and not strict.

Hence, ICZM studies are embedded in research and make a contribution to the scientific process. National examples for ICZM studies in Germany are 'ICZM-Oder' (see 'www.ikzm-oder.de') and 'Coastal Futures' (see 'www.coastal-fiutures.de'). These two reference studies were initiated by the BMU to acquire more specific 'best-practice experiences'[3]. Examples for ICZM studies at federal state and regional level are INTERREG III projects. These are community initiatives, which aim at stimulating interregional cooperation in the EU (see European Commission, 2006). Exemplary projects are 'CoPraNet' (see 'www.coastalpractice.net'), 'BaltCoast' (see 'www.sustainable-projects.eu'), and the 'Coastal Protection and Seal Level rise'-project of the trilateral Wadden Sea Secretariat (see 'http://cwss.www.de/management/cpsl/ cpsl.html'). Characteristically for these studies is their connection to a bigger scientific 'umbrella'. An umbrella has the function of uniting a group of similar things.

[2] 'Regional and local level' refers to regional and local projects along the coasts of the Baltic and Northern Sea. This containment was conducted since the view of the study falls on primarily Germany that borders these two seas only.

[3] The term 'best-practice' relates to "*successful initiatives or model projects that make an outstanding, sustainable, and innovative contribution to an issue at hand*" (Bennedixen and De Guchteneire, 2003).

ICZM projects are regarded as local and regional activities which are executed and funded by a project execution organisation, such as private industries or municipalities. Examples for German ICZM activities are 'KERN' (see 'www.kern.de') and 'Region Uthlande' (see 'www.inselundhalligkonferenz.de').

1.5 Problem description

Numerous ICZM activities at European, German, federal state and regional/local level have gained extensive experiences and developed recommendations and/or guidelines. Nevertheless the establishment of ICZM in Germany seems to contain significant gaps. First of all, it is not clarified how to formally implement ICZM in legal structures. Secondly, it is not apparent how ICZM can be executed at regional/local level. Many coastal practitioners and stakeholders[4] do not know how to initiate and maintain ICZM.

1.6 Research objective

The objective of this study is to develop guidelines[5] for Germany concerning formal implementation and practical execution of ICZM. The basis is build by a determination of main gaps in the German ICZM process (see Chapter 2.1), followed by conducting a critical evaluation of three national ICZM strategies (see Chapter 2.2), and three regional/local ICZM projects along the Baltic and Northern Sea (see Chapter 2.3).

1.7 Research questions

1. What are the main gaps of the ICZM process in Germany?
2. What are the lessons to be learned for the German ICZM process concerning formal implementation from the ICZM strategies of three other EU member states, namely Belgium, The Netherlands, and the United Kingdom?
3. What are the lessons to be learned for the German ICZM process concerning execution of ICZM measures from the experiences by three regional/local ICZM projects?
4. Which guidelines can be formulated for the German ICZM process on basis of (1) the national ICZM strategies of the three EU member states and (2) the experiences by the three regional/local projects?

[4] In the study at hand, the term 'stakeholder' is used for a person or organization with an interest in the coastal zone, where 'interest' refers not only to an intellectual or power-related concern, but also to anything that has, or might have, an effect on the actual or perceived well-being of the person or organization.

[5] Guideline is understood as any document that aims at streamlining particular processes according to a set routine.

1.8 Content of the report

The following chapter (chapter two) of the present study deals with the methodology used. It can be divided into four research approaches: deficit approach, top-down approach, bottom-up approach, and development of guidelines.

Chapter three is concerned with ICZM in Germany. It presents the main gaps of the German ICZM process and refers to research question one.

Chapter four deals with ICZM in Europe. The results of the analysis of three EU national ICZM strategies are displayed, focussing on aspects of formal implementation. This chapter gives answer to research question two.

Chapter five examines ICZM in the regional and local context. It displays the results of the evaluation of three regional/local ICZM projects, two at the Baltic Sea and one at the North Sea coast. The attention is turned to the experiences gained throughout ICZM execution. Thereupon strengths, weaknesses, opportunities, and threats for each of the projects are presented. This chapter refers to research question three.

In chapter six the results of the preceding chapters are brought together, leading to guidelines for ICZM in Germany. It is concerned with research question four.

In chapter seven, methodology, and results of the study are discussed.

Finally, chapter eight draws conclusion and gives recommendations.

2. Methodology/Research methods

The framework of the study forms the conceptual model of Clark (1992). It shows all relevant levels of ICZM (see Figure 2). Thereby, ICZM is seen as an approach that comprises vertical and horizontal integration. Vertical refers to formal implementation at high, regional, and local governmental level. Horizontal stands for integration of different sectors, such as industry, enterprise, infrastructure, fishery, agriculture, nature conservation as well as tourism and recreation.

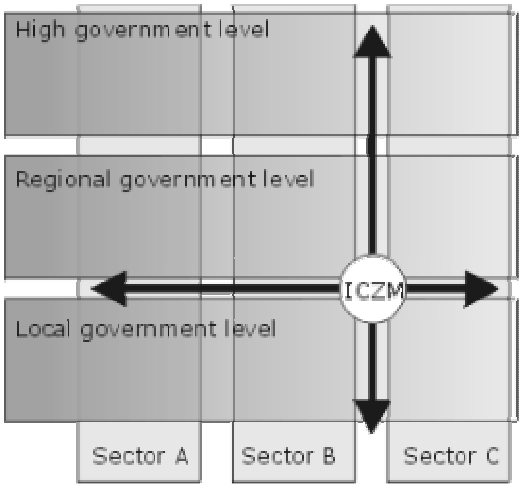

Figure 2: Conceptual model of ICZM comprising relevant vertical and horizontal levels of ICZM (adapted from Clark, 1992)

Taking the conceptual model into consideration, a methodology has been composed by the author, which refers to the various levels of ICZM. Concerning vertical levels, the present study examined the ICZM process at European, national, federal state, regional, and local level. Regarding horizontal levels, ICZM strategies, and projects have been sampled, that were expected to have the most sufficient findings concerning a high variety of coastal sectors.

In order to answer the research questions adequately, the methodology of this study is geared to the four research questions. Accordingly, the methodology is composed of four different research approaches:

1. Deficit approach
2. Top-down approach
3. Bottom-up approach
4. Development of guidelines

The following scheme (see Figure 3) illustrates the methodology of the study comprising the four different research approaches mentioned above.

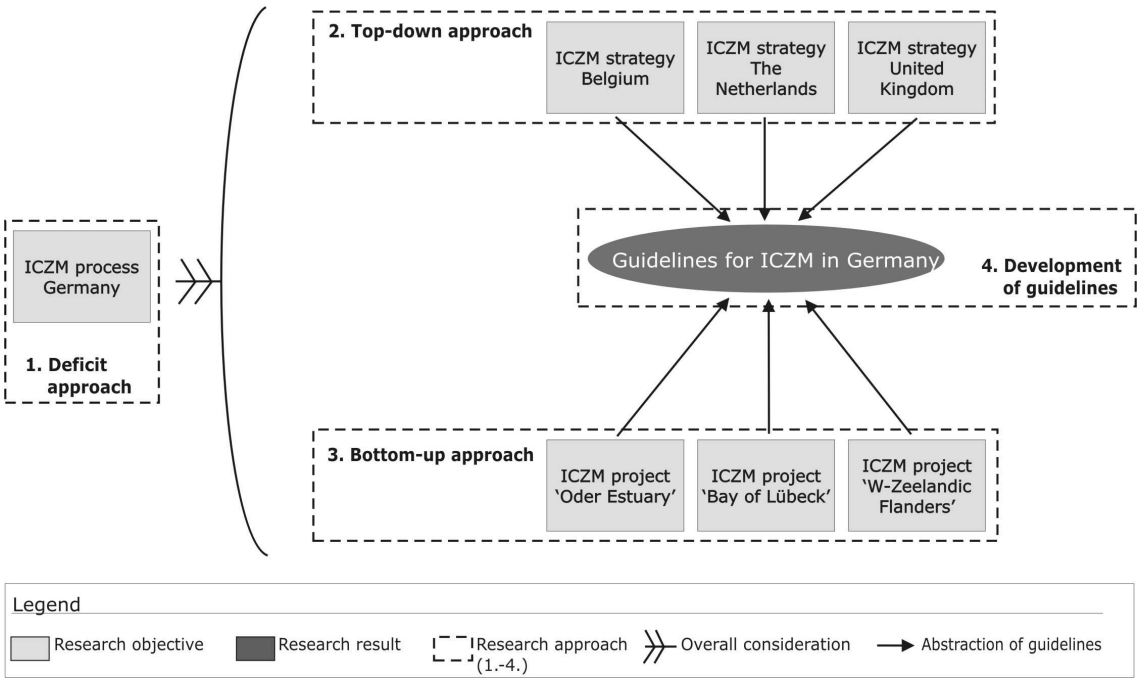

Figure 3: Schematic methodology of the study

Each research approach comprises various research methods. They are divided into methods of sampling, data collection and data analysis (Punch, 2005). It is necessary to briefly describe the basic principles of these three steps.

Sampling: "*All research involves sampling. This is because no study, whether quantitative, qualitative or both, can include everything: you cannot study everyone everywhere doing everything*" (Punch, 2005). Here, sampling is about selecting a number of units (case studies and national ICZM strategies) that are to be investigated. The idea beyond is that the conclusions drawn on the analysis of these units can be used to draw conclusions for all of Germany. This process is called inference or generalisation.

Data collection: The data collection gives attention to qualitative data mainly, thus "*empirical information about the world, most of the time in form of words*" (Punch, 2005). This study concentrates on literature research and interviews, at which interviews stand for face-to-face-, telephone- and email interviews.

Data analysis: A high variety and diversity of qualitative and semi-qualitative data analysis approaches exists (see Miles and Huberman, 1994; Tesch, 1990). A single methodological framework does not exist. But all methods for (semi-) qualitative data analysis need to be systematic, disciplined and transparent (Punch, 2005). The present study complies with these guiding principles, especially by the development of an own framework for ICZM project

evaluation (see Table 2). Furthermore quantitative aspects are integrated in the study since "*quantitative research is especially efficient at getting to structural features, while qualitative analysis is usually stronger in terms of processual aspects*" (Punch, 2005). Both strengths are brought together in this study.

The following table (see Table 1) presents an overview of the respective research methods used for each research approach.

Table 1: Overview of research methods (of sampling, data collection, and data analysis) used according to research approaches and research questions (RQ)

RQ	Research approach	Research methods		
		Sampling	**Data collection**	**Data analysis**
1	Deficit approach	Theory based sampling (Punch, 2005)	Literature research Semi-structured interviews (Poate and Daplyn, 1993)	Gap analysis (Blumensaat et al., 2006) Peer-review (Weller, 2001)
2	Top-down approach	Theory based sampling (Punch, 2005)	Literature research	Lessons Learned (Rose, 1991; Secchi, 1999)
3	Bottom-up approach	Theory based sampling (Punch, 2005) Maximum variation sampling (Punch, 2005)	Literature research Semi-structured interviews (Poate and Daplyn, 1993)	Evaluation framework (according to GESAMP, 1996; Olsen et al., 1998; Pickaver et al., 2004; SPICOSA, 2007) Traffic light procedure (Halliday et al., 2001) SWOT-analysis (Horn et al., 1994)
4	Development of guidelines	-	Semi-structured interviews (Poate and Daplyn, 1993)	Abstraction (Punch, 2005) Peer-review (Weller, 2001)

In the following, each research approach is described in detail according to its research methods used. Thereby, the descriptions follow the division of sampling, data collection, and data analysis.

2.1 Deficit approach (German context)

2.1.1 Sampling

Literature was chosen by **theory based sampling** that means "*the researcher needs to select purposefully those resources that can give information about (aspects of) the problem or process in that specific situation*" (Punch, 2005). In this study, it was tried to focus on most up-to-date documents that describe and assess the ICZM process in Germany.

The interview participants were also chosen by theory based sampling. Thereby, it was an important criterion to approach ICZM experts from different vertical (national, federal, regional/local) and horizontal (politics, consultancy, research) levels.

2.1.2 Data collection

The data collection was conducted by three tools. First, **literature research** with focus on the national ICZM strategy of Germany and supporting documents such as external evaluations of the German ICZM process.

Second, **semi-structured interviews** with the following German ICZM key experts: Ahlhorn, Dickow, Fichtner, Haese, Hamann, Janßen, Kannen, Krause, Schernewski, and Wenk. The questionnaires were designed according to six principles of Poate and Daplyn (1993) which are: minimum of topics, shorter than 60 minutes, easy to use, self contained, directly coding and smart presentation.

Third, a **peer-review** of the results of the gap analysis was conducted. It aimed at reviewing the internal validity of the analysis that means "*the extent to which the findings faithfully represent and reflect the reality which has been studied*" (Weller, 2001). The main reason for conduction a peer-review is because the results of the gap analysis constituted the starting point for the further analyses. Hence, the scientific accuracy of the gap analysis was essential for the whole study. The following experts have reviewed the results: Dickow, Fichtner, Kannen, Liebrenz, Schernewski, and Schuchardt.

2.1.3 Data analysis

The analysis of the data was performed by a **gap analysis**. A gap analysis constitutes an appropriate and target oriented approach since it principally aims at answering one main question: What is the gap or deficit in the system elaborated? "*The upfront clarification of this key question is rather vital to find the optimal or a set of potential solutions resolving a particular deficit situation in this system*" (Blumensaat et al., 2006).

In order to get satisfactory answers it is necessary to set up a precise question. Therefore, the above mentioned question is concretised:

1. What are the deficits or problems of the ICZM process in Germany?

At first, this question is answered by literature research of relevant and most up-to-date documents on ICZM for Germany. Then, the question is posed within the frame of semi-structured interviews with ten German ICZM key-experts of various levels and sectors. Every of the ten participants defined between three and five gaps of the German ICZM process. These gaps were assembled and clustered into groups according to similarities. Finally, each gap was allocated to one specific group (see Table 8). By the number of nominations, a ranking of the gaps could be derived (see Figure 6). Finally, the findings of the literature research and the interviews were compared and main gaps of the German ICZM process were derived.

2.2 Top-down approach (European context)

2.2.1 Sampling

The nomination of the ICZM strategies was accomplished by **theory based sampling**. Therefore, the results of the gap analysis were taken into consideration (thus, the two most nominated gaps of ICZM in Germany) and strategies were chosen which have potentials for bridging these gaps. In order to draw best suitable and tailor-made conclusions for Germany, the choice was accomplished according to two criteria. First, countries were taken into considerations which are bordering the Baltic and/or the North Sea (so as Germany does). Second, countries were chosen where scope and implementation of ICZM is farthermost proceeded. According to table 6 and table 10 of the evaluation of Rupprecht Consult and International Ocean Institute (2006), the ICZM strategies of Belgium, Finland, The Netherlands and the United Kingdom are best suitable to draw conclusions for Germany. Since all Finnish documents are available in Finnish only, they were not taken into account.

2.2.2 Data collection

All data collection is performed by **literature research**. The literature studied is composed of ICZM strategies of Belgium, The Netherlands, and the United Kingdom as well as of 13 ICZM-related documents of the three countries.

2.2.3 Data analysis

The three ICZM strategies and related documents were examined in terms of **lessons learned.** "*A lesson learned is knowledge or understanding gained by experience. (…) A lesson must be*

significant in that it has a real or assumed impact on operations; valid in that is factually and technically correct; and applicable in that it identifies a specific design, process, or decision that reduces or eliminates the potential for failures and mishaps, or reinforces a positive result" (Secchi, 1999).

Since it is focussed on lessons to be learned for Germany, the following questions (derived from the results of the gap analysis) build the framework for analysis:

1. Where and how is ICZM implemented formally in the particular country? Are the principles of ICZM integrated in existing structures, initiatives, and networks?
2. Which institution/person is responsible for ICZM? What are their tasks?

Finally, lessons learned were drawn according to the classification of Rose (1991). He has identified five ways of lesson drawing: "*copying*" (more or less intact adoption of a programme), "*emulation*" (adoption with adjustment for different circumstances), "*hybridization*" (combining elements of programmes from two different places), "*synthesis*" (combining familiar elements from programmes in effect in three or more places), or "*inspiration*" (programmes elsewhere used as an intellectual stimulus for developing a novel programme without an analogue elsewhere).

2.3 Bottom-up approach (regional context)

2.3.1 Sampling

The selection of the case studies has been accomplished by **theory based sampling**. Thereby two criteria were determining factors. First, the regional/local ICZM projects should constitute 'best-practice' projects. This term relates to "*successful initiatives or model projects that make an outstanding, sustainable, and innovative contribution to an issue at hand*" (Bennedixsen and De Guchteneire, 2003). And second, the projects have to be located either at the Baltic or at the North Sea. Therewith the research tends to draw best suitable conclusions for Germany (that is bordered by these two seas). Based on a pilot survey, three ICZM projects were chosen, two at the Baltic Sea and one at the North Sea.

Interview participants are sampled according to **maximum variation sampling**. That means "*to seek as much variation as possible*" (Punch, 2005). In practice, emphasis was placed to ask participants of the administrative, scientific and public sector as well as people from various vertical levels.

2.3.2 Data collection

The first part of data collection was conducted by **literature research.** The focus was set on publications of the ICZM projects 'ICZM-Oder estuary', 'ICZM-Bay of Lübeck', and 'ICZM-Western Zeelandic-Flanders'.

The second part of data collection accounted for **semi-structured interviews.** The questionnaires were designed according to Poate and Daplyn (1993). For each project, key experts and insiders were consulted: Fichtner, Janßen, Löser, Maak, Schernewski, and Wenk for 'ICZM-Oder estuary'; Hamann, and Riemer for 'ICZM-Bay of Lübeck'; and Boomert, Maenhout, and ten Braak for 'ICZM-Western Zeelandic-Flanders'.

2.3.3 Data analysis

The data analysis is geared to '**The Miles and Huberman Framework for Qualitative Data Analysis**' (Miles and Huberman, 1994). This approach is particular suitable for this part of the study since it is directed at arriving at conclusions. Miles and Huberman (1994) established three main components for analysis, which they label "*data reduction"*', "*data display*" and "*drawing and verifying conclusions*". In the present bottom-up approach, for each of these components a particular research method is applied. These three methods are described in the following.

"*Data reduction happens through editing, segmenting and summarizing the data (…) as well as associated activities such as finding themes, clusters and patterns*" (Miles and Huberman, 1994). To meet these demands, an own **evaluation framework for ICZM projects** has been applied first. The framework is based on the Coastal Management Cycle of GESAMP (1996), which defines five basic steps of coastal management projects: (1) Issue identification and assessment, (2) Program preparation, (3) Formal adopting and funding, (4) Implementation and (5) Evaluation (see Figure 4).

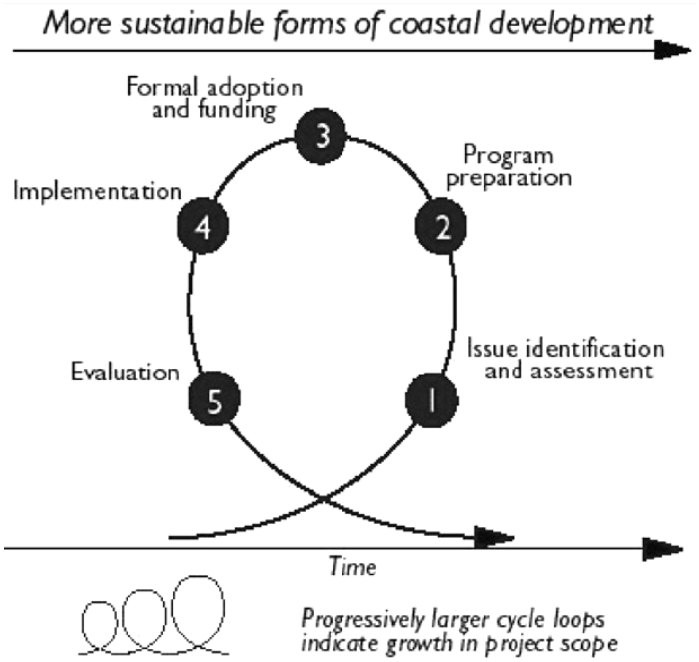

Figure 4: The Coastal Management Cycle (adapted from GESAMP, 1996; as found in Olsen et al., 1998)

Olsen et al. (1997) concretized the cycle by giving priority actions for every step of the cycle. It can therefore be used as a "*methodology for tracking the maturity and the capacity of a CM* (Coastal Management) *project or program. It can also be used to structure elements of performance evaluations and outcome valuations*" (ibid.). Since Olsen developed the cycle for North American conditions, it can not be transferred one-to-one to the German context. Whereas Olsen assumes that there are no coastal regulations present at the starting point of an ICZM initiative, the situation in Germany is different. There, a lot of legislations concerning coastal management already exist (see Chapter 1.3). Furthermore Olsen favours a hard implementation that means a build-up of new regulations and structures, whereas in Germany it is intended to integrate all aspects of ICZM into existing regulations and structures (BMU, 2006). Taking these differences into account, the Coastal Management Cycle had to be modified in two aspects. First, an additional step has been inserted, called 'Identification of preconditions for planning, management, and funding'. This step takes existing policy and regulations for the coastal zone in Germany into account as stressed by Pickaver et al. (2004) and SPICOSA (2007). Second, the gaps of the German ICZM process (see Chapter 3.1) expanded into the framework. Therewith, it is intended to gain knowledge and cognition in order to bridge the gaps of ICZM in Germany and enhance the German ICZM process.

To sum up, data reduction is operationalised by the development of an own evaluation framework for European ICZM projects (see Table 2). In the course of the bottom-up approach

three regional/local ICZM projects are examined in-depth according to the steps of this framework.

Table 2: Evaluation framework for European ICZM projects (according to GESAMP, 1996; Olsen et al., 1998; Pickaver et al., 2004; SPICOSA, 2007)

Step	Action and Description
1. Identification of preconditions for planning, management and funding	1. Choosing a particular issue or problem situation to address 2. Elimination of planning and management options that are not enforceable (legal, political, societal) 3. Identification of the major stakeholders and their interests 4. Discussion of the focal issues of the management initiative 5. Identification of scale and extent affected by the issue and definition of system boundaries 6. Defining possibilities for political implementation of the ICZM initiative 7. Obtaining of formal endorsement of policy and authorities necessary for formal implementation (see step 4) 8. Identification of sustained funding options
2. Assessment	9. Assessment of the environmental, social and institutional issues and implications 10. Invitation for review and response of the assessment 11. Defining surpluses of the ICZM initiative for stakeholders 12. Definition of a shared goal/vision of sustainable development for the initiative
3. Preparation of a plan/strategy	13. Conducting of scientific research targeted at selected management questions 14. Inclusion of the marine and terrestrial part of the coast 15. Development of scenarios, comparing costs and benefits of alternatives 16. Participation of stakeholders and communities in the decision-making process 17. Inclusion of cooperation possibilities with other ICZM initiatives, at regional, federal state, and (supra-) national level 18. Development of a multi-sectoral management plan/strategy 19. Nomination of a suitable institutional framework for formal implementation 20. Formulation of practical instructions for staff, institutions and stakeholders

4. Formal implementation	21. Obtaining of governmental mandate for planning and policy formulation process 22. Integration of ICZM aspects in existing structures, initiatives or networks 23. Nomination of responsibilities 24. Nomination of explicit tasks 25. Flow of information: top down and bottom up
5. Practical implementation	26. Nomination of responsibilities 27. Nomination of explicitly tasks 28. Insurance that the amount of information on coastal issues is made available to practitioners when they need it and in a form that they can readily use it 29. Tackling main ICZM-related problems
6. Evaluation	30. Periodic external evaluations of governance processes and outcomes and a documentation of results which is open to the public 31. Adaptation of the program to its own experience and to changing social and environmental conditions (iteration)

"*Data display organises, compresses and assembles information. (…) There are many ways of displaying data – graphs, charts, networks, diagrams – and any way that moves the analysis forward is appropriate*" (Miles and Huberman, 1994). In this study, the results of the bottom-up approach are displayed in a quantitative screening process, called **traffic light procedure** (see Halliday et al., 2001). This method is suitable since it "*offers in first instance a framework for comparing data. (…) Further it provides a way of confronting different indicators and comparing the relevance to a management process*" (Caddy et al., 2005). In practice, the results are displayed in a table according to each action of evaluation framework (see Table 2). Every action got assigned to a specific colour of a traffic light, at which green stands for 'fulfilled', yellow for 'partly fulfilled' and red for 'not fulfilled'. Based on this visual classification, it was possible to make up strong and weak aspects of an ICZM project. Below, an extract of the traffic light table is shown (see Table 3).

Table 3: Traffic light table (exemplary extract) for displaying the results of the ICZM projects evaluation according to different actions, at which green stands for 'fulfilled', yellow for 'partly fulfilled' and red for 'not fulfilled'

Step	Action	Description		Results
1. Identification of preconditions for planning, management and funding	1.	Choosing an issue or problem to address		
	2.	Elimination of unenforceable management options		
	3.	Identification of relevant stakeholders		

"*Drawing and verifying conclusions logically follows reduction and display of data. Possible conclusions may be noted earlier in the analysis, but can be finalized first when all data are in and have been analysed*" (Miles and Huberman, 1994). The final component is represented by the application of a **SWOT (Strenghts-Weakness-Opportunities-Threats) analysis**. This method is frequently used in the field of environmental management to determine current strengths and weaknesses and to estimate future opportunities and threats of certain projects (Horn et al., 1994). This method is appropriate for drawing conclusions since it summarises results in an analytical and communicative way. The main interest of the analysis is to investigate the strengths and weaknesses that can make a contribution in form of recommendations or guidelines towards an enhancement of ICZM in Germany. The results of the SWOT analysis are illustrated for each ICZM project in form of a SWOT table (see Table 4).

2.4 Development of ICZM guidelines

2.4.1 Sampling

Since the development of guidelines made use of the results of the preceding analyses, no specific sampling strategy was necessary.

2.4.2 Data collection

The first part of the data collection is build by the **results of preceding analyses**, which are the gaps of ICZM in Germany, lessons learned from Belgium, The Netherlands and the United Kingdom, as well as the experiences of the regional/local ICZM projects analysed.

The second part is build by **semi-structured interviews**. In all interviews of the bottom-up approach, the question was posed which essential experiences should attract attention at the national German level. The given answers are taken into consideration for the development of guidelines.

After the development of the guidelines, they were **peer-reviewed** by German ICZM experts, namely Fichtner and Schernewski. Therewith, errors were minimised and the validity and reliability of the guidelines could be assured.

2.4.3 Data analysis

The research method used in order to develop guidelines is called **abstracting**. "*The essential point is that some concepts are at a higher level of abstraction than others. The term 'concrete' and 'abstract' describe this continuum of abstraction, as do the terms 'specific' and 'general'*" (Punch, 2005). For this study it meant taking specific information on ICZM gaps, ICZM strategies, and ICZM projects into consideration and developing higher order concepts, thus guidelines. Thereby the guidelines are modelled after UNEP (1995; 1999), UNESCO (1997), and Post and Lundin (1996). The following figure shows the idea of abstraction in qualitative or semi-qualitative data analysis (see Figure 5).

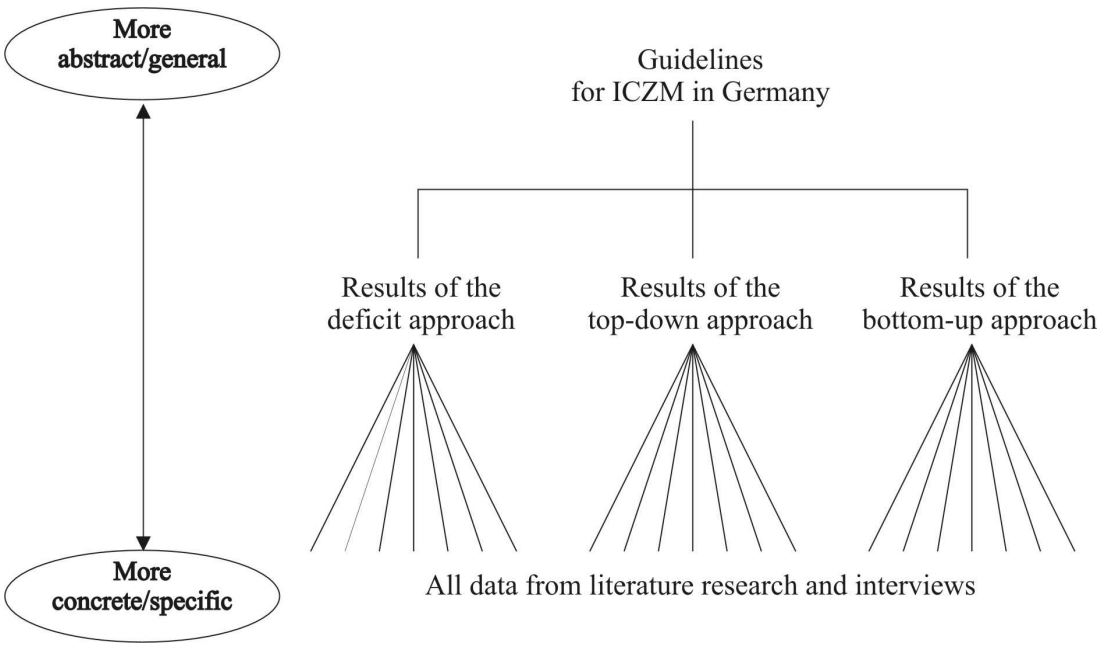

Figure 5: Development of guidelines by abstraction (according to Punch, 2005)

3. ICZM in Germany

A lot of positive aspects and achievements of ICZM in Germany are mentioned in literature (see Dickow and Liebrenz, 2007; EUCC, 2007; Glaeser et al., 2004; Rupprecht Consult and International Ocean Institute, 2006). However, in order to answer research questions one (see Chapter 1.7) it is necessary to concentrate on gaps of the German ICZM process.

Therefore, the following central question was posed: What are the gaps or problems of the ICZM process in Germany? At first, it was tried to answer this question by literature research of relevant and most up-to-date documents on German ICZM. Then, the question was posed within the frame of semi-structured interviews with German ICZM experts of various levels (national, federal state, regional/local) and sectors (politics, research, and consultancy). Finally, after preparation of the results, an expert validation of the results of the gap analysis was conducted in order to review the internal validity of the analysis.

3.1 Gaps of the German ICZM process

The most apparent concerning ICZM in Germany is the German ICZM strategy. Therein the authors distinguish four main deficits, which are sustainable development, integration, participation and communication as well as experience transfer (BMU, 2006). Furthermore, the authors recognise that an optimization is necessary, especially in the fields of formal implementation, definition of responsibilities and coordination of activities (ibid.). Fichtner (2006) strengthen this statement by saying: "*The questions remain unanswered who organises ICZM processes, who is responsible for ICZM and which tools can be used for execution and how ICZM can be integrated in other sectors*".

Schernewski (2004) lists nine explicitly deficits of Germany's ICZM which are: failure of an institutional and strategic frame, numerous competencies and responsibilities, complex legislation, administrative division in five coastal federal states, strict separation of land and water, missing knowledge and experiences, late and insufficient public participation, lack of data and information availability, and lack of cross-sectoral cooperation and communication.

The final report of a research project on the interaction of spatial planning and ICZM in Germany recommend several actions for the German ICZM process. It was possible to derive various shortcomings of the ICZM process from these recommendations. The most relevant are: failure of a consensual vision and overall concept for the coast and sea, complexity of German operation levels, lack of thematic and operational priorisations, failure of established structures

in order to coordinate ICZM, lack of communication and flow of information, and weak (international) cooperation of ICZM activities (Gee et al., 2006).

Bray et al. (2007) present the findings of a survey of the perspective of regional administrative units and stakeholders on the German coast. Their main results concerning the German gaps are: the concept of ICZM is not well understood, failure of recognition of practical ICZM measures at the coast, lack of integration of the public in administrative process, lack of equal valuation of coastal interests during conflict resolution procedures, and weak institutional integration of ICZM in administrations.

From this most relevant and up to date literature, it can be summarised that there are three main groups of shortcomings of the German ICZM process:

1. Lack of clarity concerning formal implementation of ICZM in administrations, structures, and legislations
2. Lack of knowledge, awareness, and participation concerning the execution of precise ICZM measures
3. Lack of communication between public and administration as well as between science and stakeholders

The results of the interviews conducted indicate that ICZM experts figure out two main gaps of the German ICZM process, which are (1) Fuzziness concerning formal implementation of ICZM (ten nominations), and (2) Lack of best-practice experience and knowledge transfer (nine nominations). They can be assessed as the foremost important gaps, since other gaps comprise four or fewer nominations only (see Figure 6).

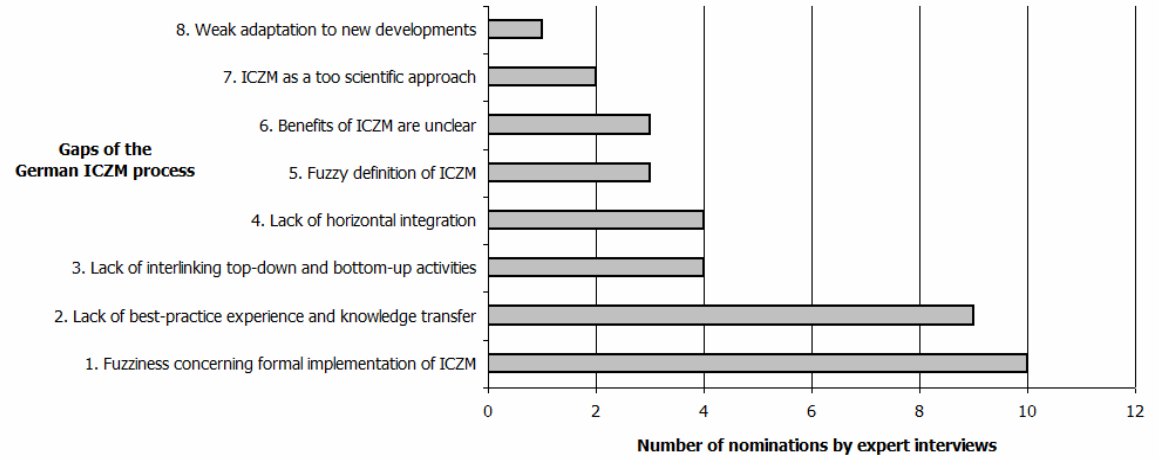

Figure 6: Gaps of the German ICZM process and their number of nominations by expert interviews

Therewith, the findings of the literature research are in line with the results of the interviews. For that reason, the study at hand concentrates on these two gaps mainly. However, it is also tried to incorporate additional gaps (such as lack of communication) if they are closely connected with the two main gaps.

Following, the results of the gap analysis are presented in detail according to the main two gaps, which are (1) Fuzziness concerning formal implementation of ICZM, and (2) Lack of best-practice experience and knowledge transfer.

3.1.1 Gap 1: Fuzziness concerning formal implementation of ICZM

The ICZM strategy of Germany clarifies that the principles of ICZM should be implemented in the existing legal system, and that ICZM is "*not aiming at being an independent planning and decision-making tool*" (BMU, 2006). This so called 'soft' implementation implicates some difficulties. Essentially ICZM is consequently non-binding (Schernewski, 2008). It should be implemented voluntarily. Therewith, it is partly dependent on political and individual moods. Wenk (2007) assumes that most municipal institutions only undertake action if they got order from above, which refers to a legal regulation from national or federal state level, but not on voluntary basis. Fichtner (2008) confirms this statement by going as far as to suppose that the "*targets of ICZM (such as consolidation of coastal sectors) are too far reaching for a soft implementation*". A questioning among 30 German ICZM experts conducted by Bruns and Froh (2007) reflects the assumptions mentioned above. It holds the result that many participants wish for a legal ICZM framework with a certain amount of authorisation. In reverse, several governmental organisations would have to abstain partly from their competencies and decision taking authority (ibid.).

Rupprecht Consult and International Ocean Institute (2006) document that spatial planning instruments in place already interact at various levels and that there are already suitable instruments for horizontal, vertical, territorial, and temporal integration in the German ICZM process. But nevertheless, a "*clearer allocation of responsibilities at national and federal state level is required*" (ibid.). Since ICZM aims at integrating private industry, non-governmental organisations, and official sectoral planning, the issue of responsibility gets fuzzy since all have to take responsibility (Kannen, 2008). Fichtner (2008) stresses that responsibilities for all ICZM implementation levels (national, federal, regional) are not sufficiently addressed. The question stays open which institutions at national, federal state and regional/local level are responsible for which ICZM issues.

Furthermore, it is not clarified what tasks ICZM relevant institutions should perform. In that context, especially the proposed ICZM secretariat is worth mentioning. The BMU (2006) proposes an ICZM secretariat in order to coordinate the German ICZM process at national,

federal state and regional/local levels. This office should assume various functions, such as knowledge transfer, coordination, cooperation and long-term planning (ibid.). Even though some experts support the establishment of an ICZM secretariat (see ARL et al., 2007; Dickow, 2007; Gee et al., 2006; Janßen, 2008), it is not defined yet, which precise tasks should be undertaken by the office.

Furthermore, there exist different opinions on which institutional level such a secretariat should be organised. The BMU (2006) suppose one ICZM secretariat at national level, whereas Gee et al. (2006) recommend two ICZM secretariats, one for the Baltic Sea and one for the North Sea region. Within the 'Joint declaration on ICZM' three ICZM secretariats are recommended, one for each coastal federal state (ARL et al., 2007). However, Fichtner (2007) expresses his concerns that an ICZM secretariat at federal state level is too far away from ICZM practices at local level. He favours ICZM contact points at regional level.

A general difficulty of formal implementation of ICZM can be seen in the complex German federal structure (Schernewski, 2008). It holds the risk that all federal states develop their own uncoordinated ICZM strategies (Krause, 2008). In order to avoid an unmanageable patchwork of ICZM measures, tools and visions, a multitude of research institutes and administrations work on sustainability indicators for the coast (see Daschkeit et al., 2006; Hoffmann, 2006; Milbert and Schmitt, 2007). However, the BMU (2006) is missing a simple indicator system in order to describe the progress and state of sustainability for the coast of Germany.

A striking point of implementing ICZM is its integrative approach. It is intended to consolidate the most relevant sectors of Germany's coastal zones (BMU, 2006). However, Janßen (2008) sees a lack of horizontal integration of various sectors. Ahlhorn (2008) emphasises strong sectoral proceedings in coastal-, conservation- and economic planning. Especially social and economic sectors seem to be poorly integrated in ICZM (Kannen, 2008; Krause, 2008). Furthermore, the legislative division of land, coastal waters and Exclusive Economic Zone (EEZ) avoids integrative implementation (ibid.). Even Germany's spatial planning partly fails in terms of integrating different sectors (Ahlhorn, 2008).

The formal implementation of ICZM is characterized by two approaches. On the one hand, it is tried to implement the principles of the German ICZM strategy by a top-down approach. That means national and federal state legislations are responsible for a further ICZM process. On the other hand, ICZM is regarded as a bottom-up approach. That means the regions and municipalities are expected to develop their own ICZM projects (BMU, 2006). It is strived to optimize these two opposed approaches, which seems to be not succeeded yet. Kannen (2008) assesses this failure as an important gap (see Table 8). He refers to it as a lack of interlinking top-down (abstract, strategic and political papers) and bottom-up (precise wishes of local stakeholders) approaches (ibid.).

3.1.2 Lack of best-practice experience and knowledge transfer

The ICZM recommendations of the EU reveal that ICZM activities basically should take place at local and regional level (European Parliament and Council, 2002). Considering this, the German ICZM strategy derives that a "*emphasis of ICZM execution activities in Germany is placed on regional and local level*" (BMU, 2006). Furthermore, the strategy envisages four areas where further steps should be pursued. One of them calls for gaining experiences in best-practice projects (ibid.). The last statement indicates a lack of knowledge and experience concerning ICZM executions at regional and local level. Schernewski (2008) confirms this by stressing that the German ICZM process is "*lacking local and regional best-practice experiences*".

This lack of local and regional best-practice experience refers to various aspects. It is of particular importance that the German ICZM is not an applicable management approach for practitioners since it lacks exemplary descriptions of project executions (Fichtner, 2008). Ahlhorn (2008) stresses that there are insufficient tools and instruments to execute ICZM aspects (such as participation and integration) in practice. Furthermore, there do not exist elaborated instructions or guidelines for practitioners at regional and local level (Schernewski, 2008). Consequently, the majority of regional and local practitioners do not know how to execute ICZM activities at Germany's coast. According to Liebrenz (2007) many people are motivated to execute ICZM activities, but do not know how to set them into practice. They simply miss a practical approach, especially a field manual with instructions (ibid.).

Funding possibilities play an important role for local and regional ICZM. For Schuchardt (2007) it is unclear where regional ICZM initiators can get funding for the execution of ICZM projects. An organised support or contact point for ICZM funding possibilities in Germany does not exist. In literature, several funding possibilities are discussed, whereas funding via Regional Agenda 21 or the European INTERREG program seem to be most appropriate (Schernewski, 2004). However, there is little knowledge available for ICZM initiators how to fund successfully local and regional ICZM projects.

Since local and regional ICZM activities are poorly connected and coordinated with each other, there is little experience and knowledge transfer amongst them (Haese, 2008). A central coordination point, where ICZM experiences and knowledge converge, is absent (ibid.). In this regard, some interview participants see another gap of the German ICZM process, namely ICZM as a too scientific approach (see Table 8). Dickow (2008) states that the information which is made available to the wide public is often too scientific. Hamann (2008) is of the opinion that the interlinkage of practitioners and science is poor. According to him it is questionable to what extent scientific studies are relevant for local and regional practitioners (ibid.).

The gap of best-practice experiences and knowledge transfer redounds to the lack that benefits of ICZM are unclear to local and regional stakeholders (see Table 8). So far, the strengths and benefits of ICZM do not get across to local stakeholders (Janßen, 2008). That results in a lack of local and regional acceptance for ICZM (Fichtner, 2008). According to Liebrenz (2007) it has the consequence that hardly anyone see a need in participating in ICZM processes and set them into practice. Furthermore, it seems to be difficult to communicate the term ICZM with public stakeholders (Schernewski, 2007). The definition of ICZM is not clear to them. Fuzzy definitions of ICZM lead to various interpretations at various levels (Ahlhorn, 2008).

3.2 Intermediate summary

At the beginning of this chapter the question was posed, what are the gaps or problems of the ICZM process in Germany? To sum up, the German ICZM process has two main gaps. The first gap corresponds to fuzziness of formal implementation. The responsibilities for all ICZM implementation levels (national, federal, regional) are not sufficiently addressed. Furthermore, it is not becoming apparent what tasks ICZM relevant institutions should perform. The establishment of an ICZM secretariat is extensively discussed in Germany since it could make an important contribution to bridge this gap. However, it is not defined yet, on which institutional level such a secretariat should be organised and which precise tasks should be undertaken by the office.

The second gap is a lack of local and regional best-practice experience and knowledge transfer. In Germany, elaborated instructions or guidelines for practitioners at regional and local level are absent. Consequently, the majority of regional and local practitioners do not know how to execute ICZM activities at Germany's coast.

Moreover, these two gaps are closely connected to other gaps. First, a lack of interlinking top-down (abstract, strategic, and political papers) and bottom-up (precise wishes of local stakeholders) approaches. Second, the absence of awareness for benefits of ICZM at local and regional level. And third, the failure of an unambiguous and practicable definition of ICZM for national, federal state and local level.

4. ICZM in Europe

This chapter deals with ICZM in Europe and refers to research question two (see Chapter 1.7). It examines what Germany can learn from other EU countries in order to bridge its ICZM gap 'fuzziness of formal implementation' (see Chapter 3.1.1). Therefore, three national ICZM strategies of Belgium, The Netherlands, and the United Kingdom are analysed by literature research. The following questions build the framework for this analysis:

1. Where and how is ICZM formally implemented in the particular country? Are the principles of ICZM integrated in existing structures, initiatives, and networks?
2. Which institution/person is responsible for ICZM? What are their tasks?

Figure 7: Localisation of European countries taken into account to derive lessons learned for the ICZM process in Germany (on a base map by Wikimedia Commons, 2007)

Below, the current ICZM situation of each respective country is presented. Thereupon, the lessons learned for the German ICZM process are displayed according to the two questions mentioned above.

4.1 The case study Belgium

In Belgium a consultation with coastal administrative actors showed "*that there exists little preference for developing a new strategy for the coast, but rather for making use of existing policy plans and instruments*" (FOD, 2006). On this account, the Federal Public Service for Health, Food Chain Safety and Environment ('*Federale Overheidsdienst Volksgezondheit, Veiligheid van de Voedselketen en Leefmilieu*'; FOD) developed a report which does not provide a new ICZM strategy, but take existing coastal policies and future visions into consideration. The name of the report is 'National Report on the implementation of Recommendation 2002/413/EC'. It consists of three main topics. First, a brief stocktaking of coastal management and administrations in Belgium, second, special developments of ICZM issues, namely a coordination point, sustainability indicators and sea-land interactions, and third, suggestions for future ICZM in Belgium. According to Rupprecht Consult and International Ocean Institute (2006) the report "*intends to be a source of inspiration for the government to optimize its integrated policy for the coast and provide information for all actors involved who wish to acquire better insight into the efforts made so far on the coast and current lines of thinking for the future*".

The most relevant documents of ICZM in Belgium can be divided into planning on land and planning on sea. At land, environmental planning is an important instrument in the elaboration of an integrated strategy. As far as the landward side is concerned, the coast is designated as an urban network in the 'Flemish Environmental Structure Plan' ('*Ruimtelijk Struktuurplan Vlaanderen*'). In the 'Provincial Environmental Structure Plan' ('*Provinziaal Ruimtelijk Struktuurplan West-Vlaanderen*') this zone is included as a separate sub zone. At sea, a 'Master Plan for the North Sea' has been formulated in 2003, aiming at sustainable management for the North Sea. It is stated that the spatial planning for the North Sea would take place in two phases. In the fist phase, there should be systematic consultation with all actors concerned, while taking account of the electricity production, by delineating zones in which these activities are permitted and incorporating a sustainable approach in the approval procedure. In the second phase, protected marine areas should be delineated and the necessary management measures defined (FOD, 2006).

4.1.1 Lessons learned from Belgium

Formal implementation

In Belgium, no single integrated policy document for the coast exists. In recent years, policy documents for various sectors have been drawn up, which refer to the entire coastal zone or a

sub zone of it. Many documents have been produced about (aspects of) ICZM, but a clear vision of coastal future development cannot always be found (FOD, 2006).

For that reason, the issue of formal implementation in Belgium does not hold worthwhile lessons learned for the German ICZM process.

Responsibilities and tasks

Main achievements concerning responsibilities and tasks of the Belgium ICZM process are the establishment of an ICZM 'Coordination Point' and sustainability indicators for the coast, a so called 'Coastal Barometer'. Below, these two concepts are presented in detail.

The **ICZM Coordination Point** is established by the Provincial Government of West Flanders in 2001 in order to organise responsibilities and tasks of the Belgium ICZM process. The organisation "*was thought out very carefully to ensure good cooperation between the various actors. Consequently, because bridges needed to be built between all governments and partners, many other administrations and partners on the coast were also included in the organisational structure of the Coordination Point*" (FOD, 2006).

The Coordination Point goes along with three main bodies: the Steering Committee, the Task Force, and the Consultative Group (see Figure 8).

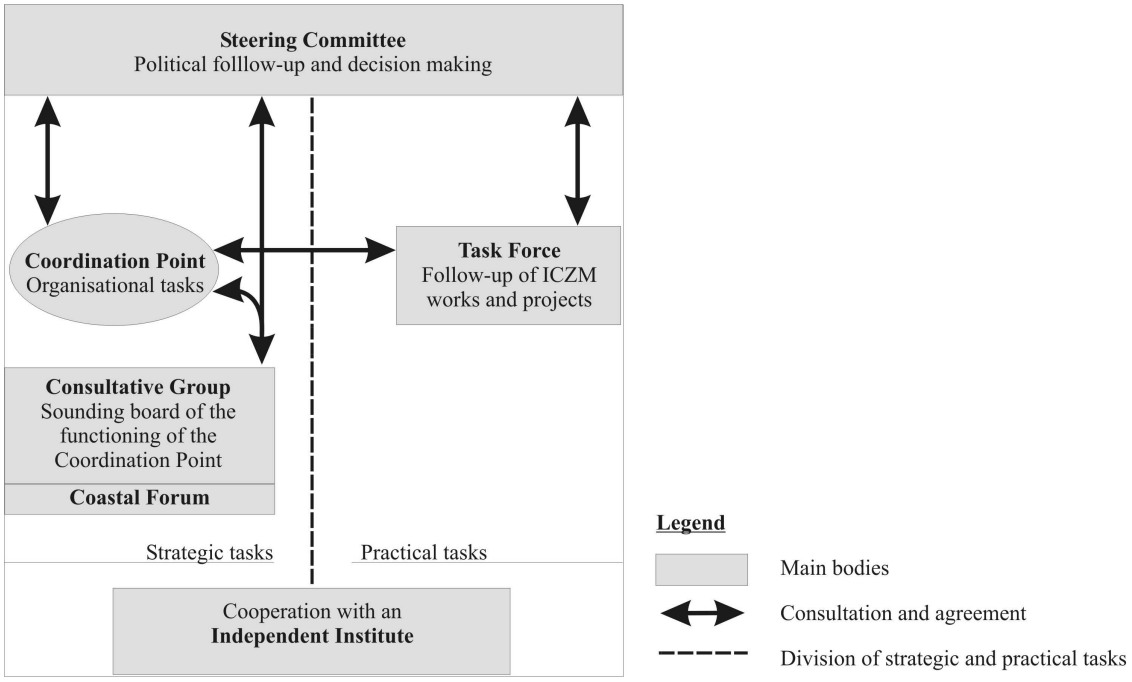

Figure 8: Schematic representation of Belgium's ICZM Coordination Point and collaborating ICZM bodies involved (according to Provincie West-Vlaanderen, 2007)

The Steering Committee is composed of the municipalities, the province of West Flanders, and relevant departments and institutions of the national government. Besides, all representatives from the cabinets of the national and Flemish government are involved. The composition of the group indicates its highly official character. Therewith the Steering Committee tends to influence the direction of coastal policy and constitutes a direct link with the cabinets involved. It deals with the political follow-up and decision-making. According to FOD (2006) its main tasks are:

- Open discussion of cross-sectoral themes (e.g. projects, policy proposals, policy plans) with all administrations concerned, relevant consultation and exchange of information
- Proposal of solutions to conflicts and preparation of strategic steering of sustainable coastal management. The proposals are always submitted to the competent ministers for approval
- Organisation of a coastal forum

The Task Force is made up of representatives from the departments responsible for nature conservation, marine environment, coastal protection, spatial planning, tourism, the Institute for Nature Conservation, the Flanders Marine Institute, and the provincial government of West Flanders (Provincie West-Vlaanderen, 2007). Representatives from other departments can be invited to attend the working group if a subject discussed concerns them. The Task Force is responsible for two main activities. First, the preparation of Steering Committee activities and the follow-up of the assignments that it receives from the Steering Committee. Second, the practical and concrete follow-up of ICZM works and projects (FOD, 2006).

The Consultative Group is composed of official representatives drawn from all disciplines and the four policy-making levels: federal, provincial, regional, and local. As the Provincie West-Vlaanderen (2007) states, "*the Consultative Group acts as a sounding board for the proper functioning of the coordination centre*". It is responsible for monitoring projects in the field and for preparing case files and projects. One component of this group is a coastal forum. It should "*facilitate the flow of information to general population and offer all involved stakeholders the possibility to push for new themes concerning sustainable coastal zone management*" (FOD, 2006).

Referring to the tasks of the Coordination Point, it is from particular importance that it "*offers a platform for consultation concerning and integration of policy making, but it cannot act in the place of the competent administrations*" (FOD, 2006). The intended result is a better fine-tuning of coastal policy between the different actors on the coast. Therefore the Provincie West-Vlaanderen (2007) defined main tasks of the Coordination Point.

- Communication and sensitisation on ICZM: awareness raising through concrete actions as part of ICZM; own publications (brochures, leaflets, posters, articles, website) about coastal subjects; organise and participate public days, seminars, workshops and conferences.
- Acting as a point of contact on ICZM nationally and internationally: running an information office and to provide in objective manner information to policy-makers, teachers, students, interested citizens, etc. - nationally and internationally; providing information from and to the international community; participating to relevant European and international ICZM projects and networks.
- Support implementation of the EU recommendation concerning ICZM: helping with the implementation of the EU recommendation concerning ICZM; stimulating the establishment of a formal basis for ICZM.
- Integration of planning and policy: acting as secretariat of working groups and consultative bodies; participating to relevant steering and working groups to work on new policy developments.

The ICZM Coordination Point developed a **Coastal Barometer**, which consists of indicators to measure the sustainable use of the coast. It should make it possible "*to monitor coastal evolution, give advice on taking decisions for future coastal developments (policy support) and ensure good communication about the coast to a wide audience*" (FOD, 2006). In a long-lasting and broad participatory process – including key experts, municipalities, hotel and catering industry, environmental associations, civil servants, and sport clubs – six priorities with 21 indicators were defined as the most important ones. They are listed below, of which some indicators are relevant for several priorities (FOD, 2006):

1. Preservation and strengthening of the socio-cultural capital: differences in salary; protection and stocktaking of real estate.
2. Realisation of administrative innovation: implementation of ICZM.
3. Quality improvement of the residential and social environment: surface area of protected area; ageing rate; residential comfort; utilisation of public transport in day tourism to the coast; surface area of dedicated coastal habitat; number of motor vehicles on the roads.
4. Support for tourism and recreation: share of public transport in day tourism to the coast; share of highly accessible accommodation units; amount of tourists that stay-over.

5. Improvement of the environment and nature: surface area of protected areas; surface area of dedicated coastal habitat; quality of beach water; residual waste; number of motor vehicles on the roads; number of observed pollution incidents (oil etc.)/flight hour; fish stocks that are not being over fished.
6. Reinforcement of the economic fabric: economic value of ports; salary pressure; ratio of company start-ups to bankruptcies; added value per employee; employment in tourism; change in employment in fisheries and agricultural sectors; fish stocks that are not being over fished; unemployment rate.

The indicators and background data for the whole Belgian coast can be consulted on the ICZM Coordination Point website 'www.vliz.be/projects/indicatoren'. The display of the coastal barometer and the background information are restricted to the essential aspects. The screenshot below (see Figure 9) shows the first priority (first column) with its two indicators (second column). The third column is named "*Kompas*" and provides background material as well as results for each indicator. The fourth column presents the "*Trend*" in a five stage scale from 'strong enhancement' (sunny weather) to 'strong decline' (rainy weather).

Figure 9: Fraction of the coastal barometer website, showing indicator (second column), link to background material "*Kompas*" (third column) and link to future "trend" (fourth column) of the priority 'Preservation and strengthening of the socio-cultural capital' (first column) (adapted from VLIZ, 2003)

Clicking on the compass in this example, the website-user gets redirected to technical explanations of the indicator 'differences in salary'. The topic is described by answering four questions: Why this indicator? What does this indicator say? What are the results? What will happen in future (VLIZ, 2003)?

Clicking on the indicator itself, the user gets forwarded to the actual state-of-the-art of salaries along the Belgian coast. Next to a describing text, the salaries of all coastal municipalities in Belgium are shown in an interactive graphic. According to requirements, the user can select specific municipalities of interest. The following figure (see Figure 10) shows the differences in salary of three Belgium municipalities.

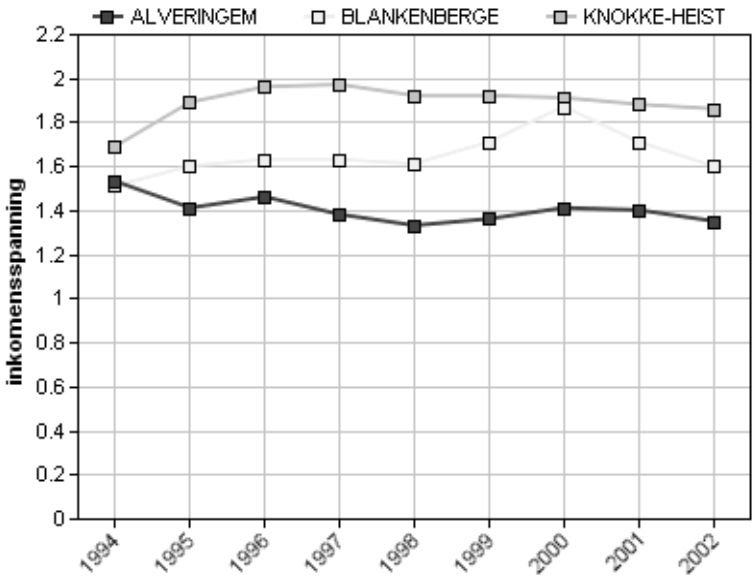

Figure 10: Interactive graphic of the Coastal Barometer website, showing 'differences in salary' of three municipalities. The x-axis presents time (from 1994 to 2002). The y-axis shows the range of income, at which value one constitutes the average income (adapted from VLIZ, 2003)

All data of the Coastal Barometer is accessible for the wide public by internet presence. Thereby, it is focussed on a simple and user-friendly presentation and description, which can easily be understood by everyone. Therewith the Coastal Barometer initiated a far-reaching discussion on future development of the Belgium coast (VLIZ, 2003).

4.2 The case study The Netherlands

The Netherlands has decided not to write a separate ICZM strategy, by reasoning that they already implement the principles of ICZM demanded by the EU recommendation in their policy. Nevertheless, the Dutch Ministry of Transport, Public Works and Water Management ('*Ministerie van Verkeer en Waterstaat*', MinVenW) has written a 'Report on Implementation in the Netherlands' to show "*the extent to which the Dutch coastal zone is being managed in an integrated and sustainable way at the time of writing*" (MinVenW, 2005). Therein, four main principles of ICZM in the Netherlands are defined.

The first principle 'decentralisation' means that the implementation of spatial policy "*should be decentralised wherever possible and centralised only where necessary*" (VROM, 2005). For the coastal zone as elsewhere, this means that a regional and local approach is to be taken to policy implementation and management, within the framework set by national government.

The second principle says that sediment-based measures for flood protection should be implemented as far as possible and rather than artificial structures. On the one hand that happens by the use of regular sand nourishment with the result that beaches become broader. On the other hand that happens by sand nourishment of the underwater shore face, which is said to be the most effective way to ensure coastal flood protection in the long term (MinVenW, 2000). The second principle can be sum up with the slogan "*soft wherever possible, hard only where necessary*" (MinVenW, 2005).

According to the Dutch strategy, a major precondition of successful ICZM is awareness of the various interests at stake in the coastal zone and a good public support base (third principle). Various stakeholder organisations around the Dutch coast play a major role in this respect. They also take part in the development of policies for coastal areas and the implementation of planning studies and projects. The same is true for private sector organisations such as the World Wide Fund for Nature (WWF) that sometimes have their own overarching visions for the coast and the North Sea (MinVenW, 2005).

The fourth principle can be summarized with 'international consultation'. All the coastal states in the EU face the task of developing integrated coastal zone management. The Netherlands are exchanging experience with other coastal states through cooperation on international projects. The same thing is happening via the EU group of experts, routine consultations between the North Sea states, and the annual meeting of the North Sea Coastal Managers Group (MinVenW, 2005).

According to Rupprecht Consult and International Ocean Institute (2006) legal instruments, in particular at national level, provide a solid foundation for coastal management. The coastal zone has been recognised as a key national structure. The fact that there is no specifically dedicated coastal management strategy does not seem to be negative per se. "*The hierarchy of policy instruments, including decentralised decision-making on the regional and local level and horizontal exchange between the administrative bodies seems to be a sufficiently strong enough platform to actually conduct ICZM*" (ibid.).

4.2.1 Lessons learned from the Netherlands

Formal implementation

The principles of ICZM are formally implemented in two Dutch documents: First, the 'National Spatial Strategy' ('*Nota Ruimte'*) from 2005, which is an integrated policy document on spatial planning in the Netherlands. And second, the 'Third Policy Document on Coastal Areas' ('*Derde Kustnota*') from 2000, which presents the existence of "*weak links*[6]" in the coastal flood defences as well as the risk of increasing storm damages in seafront settlements and aims at more resilient water systems of coastal zones.

According to these two policies, it becomes clear that ICZM in the Netherlands follows a **priority approach**. That means, flood safety and erosion management play a decisive role and have priority at the Dutch coast, whereas other issues of the coast and the sea such as economic development, nature conservation, recreation, and spatial planning play a secondary role. Thereby, flood safety is understand as to maintain flood protection structures and legislative safety standards, whereas erosion management constitutes to maintain the coastline and compensate coastal erosion (Erenstein, 2006).

In practice, the Dutch coastal management is characterised by a so called 'weak link approach'. All together, 16 weak links are defined along the Dutch coast. These must be strengthened now or in the near future to maintain the statutory safety level of inland areas. For each of the weak links, the relevant provincial authority developed an integrated planning study. Its issue was not only to strengthen the coastal flood defences, but also to improve the spatial quality of the areas. Thus, at the Dutch coast, flood safety measures have priority. Other coastal measures have to follow by integrating them in flood safety measures.

Responsibilities and tasks

According to the principle of **decentralisation**, responsibilities of ICZM issues are given as much as possible to the federal state and regional/local level. The underlying idea is that, if national government provides overall guidance but desists from more control, other tiers of government are able to take more responsibility and perform better. They have more scope to work with other authorities, civil society organisations and local residents and businesses to devise effective solutions, exploit opportunities, and adopt an approach tailored to local circumstances (MinVenW, 2002).

[6] Weak link stands for "*components of sea defence structure that, assuming the sea level rise scenario, will no longer meet the safety standards due to rising sea levels in the coming 200 years*" (MinVenW, 2002).

The basic philosophy of decentralisation addresses the need for improved regionalisation and even localisation of policymaking and management. This approach is in recognition of the three broad zones of the Dutch coast, i.e. Wadden Sea (islands included), Holland, and the Delta area (MinVenW, 2000). The Dutch Third Policy Document on Coastal Areas defines more coastal regions, which are highly different and therefore need different development goals, policies and management approaches. Examples for Dutch variations at the coastal zone are North Sea, Wadden Sea, Schelde delta, Ems estuary, and Lake Ijssel (MinVenW, 2000). However, if it comes to coastal defence and water resources, the increasingly strong role of provinces and municipalities as well as the various networks involving different stakeholders indicate an appreciation of the need for even locally tailored solutions (Rupprecht Consult and International Ocean Institute, 2006).

4.3 The case study United Kingdom

The United Kingdom (UK) is a unique case, as the arrangements for the management of coastal areas throughout the UK are complex (Rupprecht Consult and International Ocean Institute, 2006). Over the years, the different administrations within the UK (Scotland, Wales and Northern Ireland) have taken ICZM policy forward individually, with their own solutions to their own diverse coastlines (see Defra, 2006a; DOENI, 2006; Scottish Executive, 2005). Due to this "*historically rooted piecemeal development*" of a complex system of legislation and regulation relating ICZM, the UK face a current lack of a strategic overarching national approach to their coastal zone (Rupprecht Consult and International Ocean Institute, 2006).

The EU recommendation drove them to a 'Report from the United Kingdom' (see Defra, 2006b), wherein their experiences of implementing the EU recommendation are given. The report is mainly written on basis of two documents that play an outstanding role and describe the actual situation of ICZM in the whole UK. First, 'ICZM in the UK: A Stocktake' (Atkins, 2004), and second, 'Safeguarding our seas – a strategy for the conservation and sustainable development of our marine environment' (Defra, 2002).

Overall, the ICZM strategy of the UK compares its activities with the principles mentioned in the EU recommendation. It reasons that the principles "*local specificity, involvement of all parties and long term planning have been taken forward most successfully in coastal planning and management*" (Atkins, 2004).

The stocktake findings indicate that local ICZM works best, where clear conflicts have to be resolved. They also suggest that "*not every inch of the UK coast needs ICZM to be set up*" (Atkins, 2004). Nevertheless, for future development of ICZM in the UK, three main steps are proposed. First, the development of secure funding arrangements to support ICZM, second, the

design of stronger leadership at all levels (national, regional, local) and third, the engagement of more stakeholders at all levels in the ICZM process.

Roberts (2007) states that the ICZM strategy is not a strategy, but a consultation document. And further she presents that it "*didn't really say anything!*" (ibid.). The current trend goes in a direction not to develop the strategy further, but to implement the ICZM principles in the new 'UK Marine Bill', where they should be local specific, and guidelines like.

4.3.1 Lessons learned from the United Kingdom

Formal implementation

The UK has a complex system of legislation and regulation in place, which relates to ICZM. The different sectors and levels are not nested within a coherent structure and have a limited endorsement of issues related to the land-sea interface (Rupprecht Consult and International Ocean Institute, 2006). Furthermore, the UK faces a current lack of a strategic overarching national approach to their coastal zone (ibid.). For these reasons, the issue of formal implementation in the UK does not hold worthwhile lessons for the German ICZM process.

Responsibilities and tasks

The striking ICZM issues of the UK are forms and organisation of participation. It seems that participation of stakeholders and discussions with all of them is the most striking focus of all strategies. Atkins (2004) stresses that stakeholder participation and public discourse can be viewed as the main outcome of the ICZM process in the UK. Hence, there are various lessons learned concerning responsibilities and tasks, especially for the local level.

Since lessons learned refer to both, positive and negative experiences (see Chapter 2.2.3), the following lesson is also based on both experiences. **Coastal forums** play an important role for the development of ICZM and its participation in the UK. A coastal forum is a permanent working group concerned with marine and coastal issues. The establishment of national coastal forums has tradition in the UK. As Atkins (2004) mentioned there are done various experiences with coastal forums around the UK. The greatest potency of these groups is an opportunity for networking, keeping up-to-date, exchanging information and raising issues for discussion. A less successful aspect is their ability to influence government policy and facilitate action on the ground (ibid.). Part of the reason can be found in the voluntary nature of forums and in its informal links with the development of policy. Another problem that occurred is the phenomenon of "*consultation fatigue*" (ibid.), because of the large number of initiatives running in the UK. However, in the absence of any statutory basis for ICZM processes at the local level, the driving force behind many ICZM initiatives has been a desire to tackle issues of local

concern (ibid.). These are often dealt with by coastal forums and partnerships, which makes ICZM relevant to local people but also has encouraged the development of practical solutions.

A form of **early participation** of stakeholders takes place in England and Northern Ireland. There, the preliminary ICZM strategies are provided with questions after each chapter concerning the quality of the text and vision behind it. People are called upon critical feedback. That is a very early state of participation in the ICZM process. It is asked for participation before a draft plan is prepared. The examples below are taken from the ICZM strategy of Northern Ireland (DOENI, 2006).

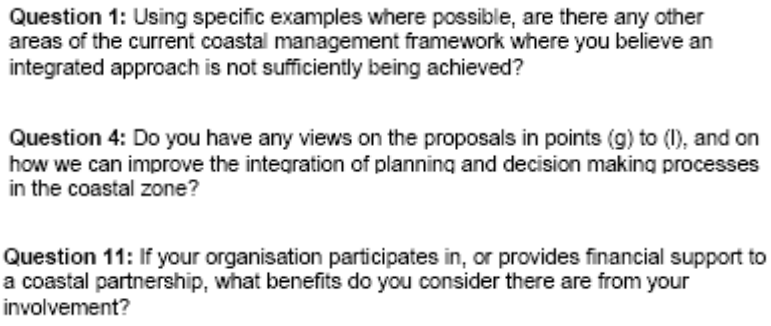

Figure 11: Selection of questions posed in the ICZM strategy of Northern Ireland showing a form of early participation of stakeholders (adapted from DOENI, 2006)

4.4 Intermediate summary

This chapter focussed on what Germany can learn from other EU countries in order to bridge its ICZM gap 'fuzziness of formal implementation'. Therefore two central issues were of interest. First, where and how ICZM is formally implemented, and second, which institution/person is responsible for ICZM and what are their tasks. After conducting the ICZM process of Belgium, The Netherlands, and the United Kingdom, several lessons learned can be concluded.

Concerning the first issue of interest (formal implementation), the priority approach of the Netherlands is worth to mention for the German ICZM process. It stands for the priority of flood safety measures at the Dutch coast, at which other coastal interests have to follow by integrating them in flood safety measures. Therewith, ICZM becomes a practicable management tool that can be integrated in flood safety measures.

Referring to the second issue of interest (responsibilities and tasks), the Coordination Point of Belgium, and the Dutch philosophy of decentralisation are good examples how responsibilities of ICZM are divided. Overall, the trend is giving as much responsibility as possible to the regions. The Belgium Coastal Barometer constitutes a simple set of indicators for sustainable development of the coast. Therewith, it can make a contribution to the German ICZM process

where "*simple*" indicators are needed (BMU, 2006). The lessons learned from the United Kingdom refer to the issue of participation. Coastal Forums have a great potency for networking, keeping up-to-date, exchanging information and raising issues for discussion, but often suffering from the phenomenon of 'consultation fatigue'. The principle of early participation holds potential for Germany since it seems to be an adequate tools to ensure that stakeholders are formally and early involved in ICZM processes.

5. ICZM in the regional and local context

This chapter deals with ICZM in the regional and local context and refers to research question three (see Chapter 1.7). This part of the present study analyses what Germany can learn from regional/local ICZM projects in order to bridge its gap 'lack of best-practice experience and knowledge-transfer' (see Chapter 3.1.2). Therefore, three regional/local ICZM projects at the Baltic and Northern Sea were examined in-depths: 'ICZM-Oder estuary', 'ICZM-Bay of Lübeck' and 'ICZM-Western Zeelandic-Flanders' (see Figure 12).

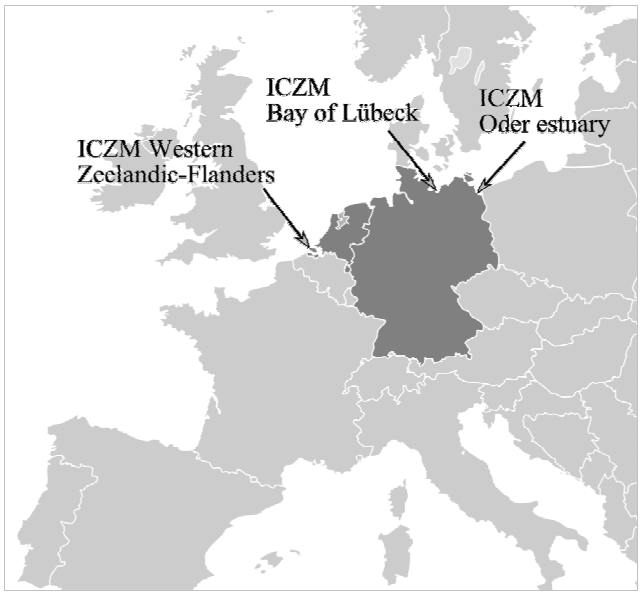

Figure 12: Localisation of the regional ICZM projects conducted in Germany and the Netherlands (on a base map by Wikimedia Commons, 2007)

After literature research of each ICZM project, the author visited the project region and conducted semi-structured interviews with key experts and insiders of each project. This data collection gained was analysed by three research methods. First, each project was assessed by an evaluation framework for ICZM projects developed by the author. Second, the results of this evaluation were displayed in a quantitative screening process, called traffic light procedure. And third, a SWOT analysis was conducted in order to draw best suitable conclusions for the German ICZM process (see Chapter 2.3.3).

Following, the results of each project analysis are displayed. First, the project basics are described that are structured in project region, initial problem, project aim and project performance. Second, the results of the project evaluation are displayed.

5.1 The case study of Oder estuary

In this chapter the ICZM project 'ICZM-Oder estuary' is described. First of all, the project basics are briefly presented. Thereupon, the results of the project evaluation are shown.

5.1.1 Project basics

Project region

The project is located at the River Oder estuary at the southern Baltic Sea bordering Germany and Poland (see Figure 13). The entire estuary is dominated by the River Oder, which has its source 854 kilometres further south-easterly in the Czech Republic. After running through Western Poland, it flows into the shallow Szczecin Lagoon and then into three branches ('*Dziwna*', '*Swina*' and '*Peene*') that empty into the Baltic Sea. The Szczecin Lagoon can be subdivided into the Large Lagoon ('*Wielki Zalew*') on the Polish side and the Small Lagoon ('*Kleines Haff*') on the German side. The whole lagoon is shallow with an average depth of 3.8 metres (Radziejewska and Schernewski, 2008).

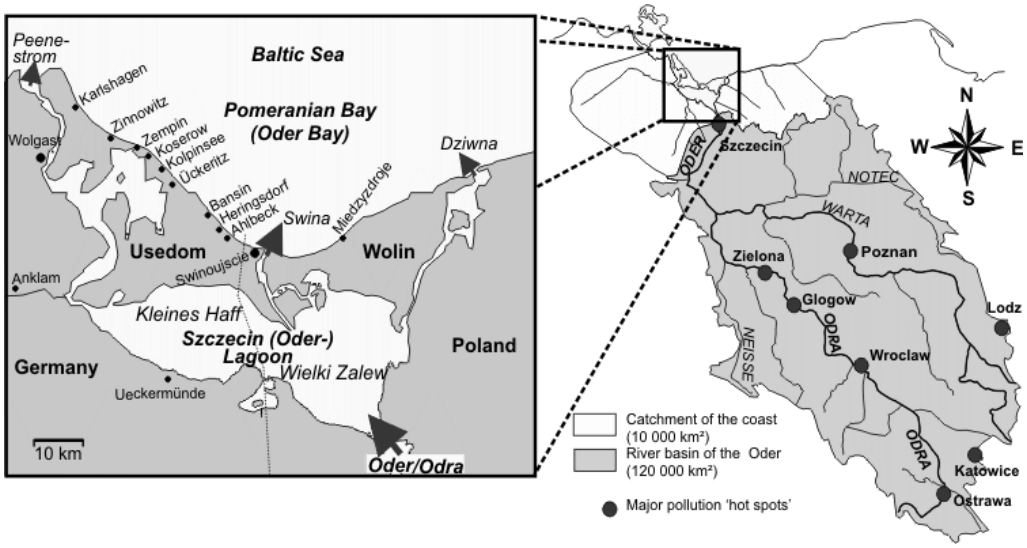

Figure 13: Project region of 'ICZM-Oder estuary' (adapted from Radziejewska and Schernewski, 2008)

The coastal region around the estuary is a complex pattern of lagoons and islands. Broad reed belts and artificial sandy beaches near the few small towns characterize the coastline. Due to its outstanding ecological value, most of the coastal area is under nature protection. A detailed description of the lagoon's ecology is given in Radziejewska and Schernewski (2008).

The main economic activities around the River Oder estuary are tourism, agriculture, fishing, and shipping. In total more than ten million tourists visit the estuary region per year and deliver a lot of money to the region (Steingrube et al., 2007). Another important source of income are

the Polish harbours, which have an annual turnover above 22 million tonnes (Schernewski et al., 2005).

Initial problem

The whole region of the Oder estuary is suffering from massive economic problems and high gradients between East and West as well as between coast and hinterland. The dwellers of the project region see their main problems in economic development, demographic development and a high rate of unemployment (Wenk, 2007).

A further problem is the high pollution of coastal waters by the River Oder. It has a 120.000 square kilometres large catchment area, from which 90% are on the Polish territory. Heavy eutrophication and water quality problems are consequence of the continuous inputs of nutrients and contaminants (Schernewski et al., 2004). Both are a problem for tourism development and nature conservation, which are most important regional issues in the project region (Dolch, 2004).

Project aims

The project constitutes a very particular ICZM initiative since it is mainly aiming at conducting research to deliver scientific output. Nevertheless the project aims at being of a practical use by accompanying the ICZM process in the region. But it is not mainly tending to put ICZM measures into practice (Schernewski, 2007).

The overall aim of the project is the sustainable development of the coastal region. Therefore tourism and environmental quality should be regarded in the context of all other regional activities and utilizations (Schernewski et al., 2007). Furthermore, the following sub-aims are nominated (ibid.):

- Answering scientific and innovative questions on ICZM, which are of fundamental and supra regional importance and based on concrete regional requirements.
- Supporting regional ICZM that plays a decisive role for the development of a national ICZM strategy in Germany and can also be regarded as a successful international case study.
- Creating permanent structures that function as a long-lasting umbrella for ICZM and exceed the project duration. The infrastructure shall integrate regional projects as well as to promote the practical regional implementation of ICZM in the long run.
- Testing and to evaluating procedures to integrate the public, to improve cross-border communication, information flow and cooperation as well as to promote the coastal catchment area dialogue.

Project performance

The project 'ICZM-Oder estuary' started in May 2004 and is divided in three phases, whereas the first two project phases ran from 2004 to 2007 and the third (currently in approval procedure) from 2007 to 2010. All phases are supported by the German Federal Ministry of Education and Research ('*Bundesministerium für Bildung und Forschung'*, BMBF) with about 3.4 million Euros (Janßen, 2007). It is one out of two reference projects on coastal management in Germany (see Chapter 1.3).

The project 'ICZM-Oder estuary' is integrated in several international activities to implement border-crossing ICZM around Germany and Poland. Therefore several cooperations were developed. 'ICZM-Oder estuary' functions as Integrated Coastal Area and River Basin Management demonstration project of the United Nations Environment Programme (UNEP), as an international project of Land–Ocean Interactions in the Coastal Zone (LOICZ), and as an ICM project of EUCC. Furthermore, it is included in the Database of World Bank's coastal and marine management projects (Schernewski et al., 2007).

The project consists of eleven partners, which belong to the field of research as well as consultancy (Schernewski et al., 2007). The coordination tasks are in the hands of the Baltic Sea Research Institute Warnemünde ('*Institut für Ostseeforschung Warnemünde*'; IOW). Additionally, the project consists of a steering committee. It should assure that the results hold practical relevance and the region benefits from the project. The committee consists of government representatives, lobbies, representatives of the districts as well as Polish members (Löser, 2007b).

The striking point of the project is that it does not deal with the practical implementation of single ICZM measures. It is not (or only limited) a practical ICZM execution project, but a research project aiming at gathering basic knowledge on ICZM. Its main focus is "*to support the initiation of implementation by scientific advice, the search for funding, the provision of a supporting infrastructure as well as the enhancement of communication and knowledge transfer*" (Schernewski et al., 2007). Therewith it aims at developing towards a model region for national recommendations and international experience transfer (ibid.).

The workings of the project are very extensive and comprise topics of environmental, social, and economic disciplines. A complete overview of all workings gives Schernewski et al. (2007). They are also published on the website of the project: 'www.ikzm-oder.de'.

5.1.2 Project evaluation

The project 'ICZM-Oder estuary' conducted for each of the six steps of the evaluation framework for European ICZM projects (see Table 2) several actions. Thereby it is obvious that

most actions of the project can be assigned to the first two steps of the evaluation framework: identification of preconditions and assessment. The fewest in turn, can be related to the last two steps: practical implementation and evaluation. That reflects the condition that 'ICZM-Oder estuary' is mainly a research project dealing with gaining knowledge rather than putting measures into practice (Schernewski et al., 2007). Following, the evaluation results of 'ICZM-Oder estuary' are described step by step according to the six steps of the evaluation framework (see Table 2). All findings are displayed in detail in the appendix (see Table 9).

The first step of the evaluation framework (identification of preconditions) is viewed as the most important step in the 'ICZM-Oder estuary' project. According to the project coordinator "*the success of an ICZM initiative depends on how efficient one could build it on existing structures*" (Schernewski, 2007). Consequently, these structures or preconditions were conducted very extensively. Therewith, the project tends to build ICZM actions on a stable and 'real-world' fundament (Janßen, 2007). It was experienced as very important to make early and intensive contact to key stakeholders from politics and administrations (and involve them in the steering committee) to arrive at early political commitment (Schernewski, 2007). The weak point of this first phase is the circumstance that main project issues were predefined in the tender of the BMBF. Therewith the problem and issue formulation came from outside but not from the region itself (Maack, 2007).

The second step of the project was characterised by extensive stocktakings, assessments, and analysis (see Erbguth et al., 2007; Janssen et al., 2007; Schabelon et al., 2007; Steingrube et al., 2007). They formed a fundamental basis for the later emphasises of the project. An elaborated stakeholder analysis is experienced by many project members as the most important analysis (Janßen, 2007; Schernewski, 2007). It should focus on representatives, their responsibilities, and their connections to each other.

Referring to the third step, the project is mainly lacking in participation of the steering committee (and other relevant stakeholders) in discussions concerning management options. The meetings of the steering committee in that phase were too infrequent and sometimes weak prepared (Löser, 2007a). The project partners informed the steering committee rather than involved it (ibid.). That led to a scientific orientation of the project and a distance to practical use (Wenk, 2007).

Formal implementation (step four) of ICZM is experienced as a dilemma by various members of the 'ICZM-Oder estuary' project (Löser, 2007a). On the one hand, no additional structures and regulations should be build-up (see BMU, 2006).It is expected that ICZM is executed at regional and local level. On the other hand, there is not much ICZM action undertaken yet at local and regional level, since most of regional policy-makers and administrations only felt obliged to implement and fund ICZM initiatives by order from a higher level (Wenk, 2007).

This dilemma is present and the project could not give an overall answer to it. But it was tried to overcome it by implementing ICZM in existing regional structures and networks. Thereby the formal implementation in the Regional Agenda '*Stettiner Haff*' and in the regional development plan of Mecklenburg-Western Pomerania is viewed as a success (Fichtner, 2007; Schernewski, 2007). Here, intensive contact to regional key policy-makers in the field of spatial and regional planning was very important, since they had the power to bring ICZM on the political agenda (Schernewski, 2007).

According to the project coordinator it was not the aim of 'ICZM-Oder estuary' to implement precise ICZM measures (step five), but to conduct research and accompany the ICZM process (Schernewski, 2007). This circumstance led to unsatisfied stakeholders in the region since the relevance of research plays a minor role for practical execution (Fichtner, 2007). According to Fichtner (ibid.) ICZM as a practical tool for regional management hasn't been carried in the region yet. Nevertheless, a lot of data was made available for regional administrations, research and the public (such as online information system, online learning system, newsletter, Geographic Information System (GIS)-ICZM, workshops, and conferences) which can be viewed as practical measures of 'ICZM-Oder estuary' (Schernewski, 2007).

A division of the project in three phases helped to adapt the contents and partners to changing conditions, which is assessed as critical self evaluation (step six). The evaluation, which is currently in process, is conducted by an internal person and bears the risk of being biased (Maack, 2007).

The strengths, weaknesses, opportunities, and threats of 'ICZM-Oder estuary' are displayed in the table below (see Table 4).

Table 4: SWOT scheme of the project 'ICZM-Oder estuary'

SWOT	Description
Strength	Through early political commitment it could be defined what is intended in the region, what is possible and in which direction the project should go. Stakeholders could be defined which have a meaning/influence beyond their function. They were able to fund and organise important issues of ICZM in the region. Discussions were a good measure to transfer ICZM into regional policy. Especially contact to regional key policy-makers in the field of regional and spatial planning was very important. They had the power to bring ICZM on the political agenda. The Regional Agenda was a suitable umbrella to reach political commitment. The activities of the Agenda office lead to a build up of a working-, communication-, and information structure within the region.

Weakness	The ICZM issue formulation did not come out of the region but from outside, namely BMBF and IOW, which lead to a lack of regional acceptance as well as a gap between research and practice. Lack of interviews and communication to arrive at stakeholders' concerns. Meeting of the Steering Committee was too infrequent and sometimes with bad preparation. The project partners informed the Steering Committee rather than involved it. The broadness and fuzziness of the ICZM term is one of the most important barriers in order to implement regional ICZM in the Oder estuary. The benefit of ICZM cannot be communicated. ICZM as a practical tool for regional management hasn't been carried in the region yet.
Opportunity	Strong involvement of administrations, policy-maker, and other stakeholders during development of the project proposal is of high relevance for the regional use and acceptance. Benefits of the ICZM initiative have to be clear to regional/local stakeholders. It is important to emerge key stakeholders which have a meaning/influence beyond their function. They are able to fund and implement ICZM issues. First assessment should be a stakeholder analysis focussing on existing representatives, their responsibilities and how they are connected which each other. An ICZM strategy can only function as an umbrella under which specific project measures/executions are defined. Next to formal structures, informal structures play a major role implementing ICZM efficiently, such as networks, communication, and engagement.
Threat	Weak involvement of regional and local stakeholders (from policy, administrations, and public) endangers the quality of an ICZM initiative. Long-term funding is very difficult if ICZM is not institutionalised since all funding is bound to election periods. Build-up of additional or parallel structures. It seems not being possible to communicate the abstract idea of ICZM.

5.2 The case study of Bay of Lübeck

5.2.1 Project basics

Project region

The study at hand concentrates on two municipalities situated at the Bay of Lübeck along the Western Baltic Sea coast in Germany (see Figure 14). They are called Timmendorfer Strand and Scharbeutz and they are two respected coastal holiday resorts.

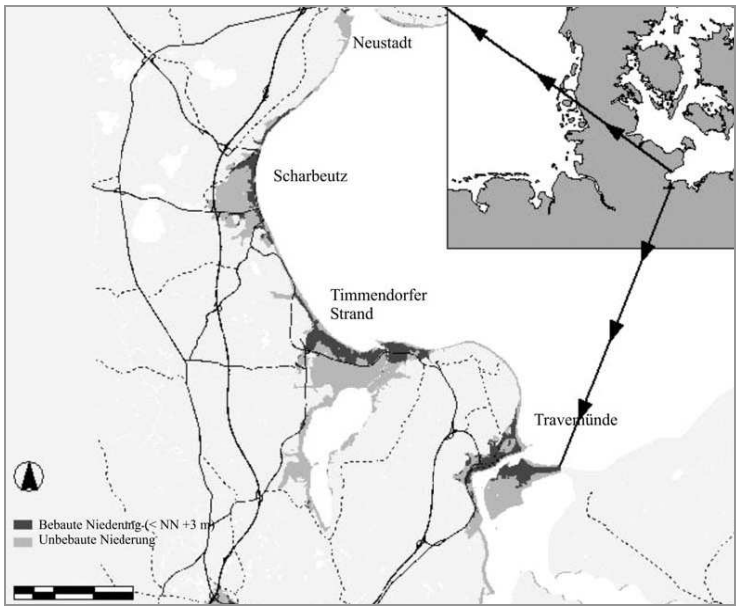

Figure 14: Project area of 'ICZM-Bay of Lübeck' (adapted from Hofstede and Hamann, 2002)

The area is characterized by two spits that separate former lagoons from the Baltic Sea. These spits have a mean elevation of about 2.5-3.0 meters above mean sea level (MSL) and are intensively built-up areas. One former lagoon still is occupied by a lake, in the other, marshes developed that are nowadays drained and cultivated extensively. Littoral currents transport significant amounts of sand from the nearby cliffs into the bight, which has a quite stable coastline as result (Hofstede, 2001).

In total almost 6.000 inhabitants live in Timmendorfer Strand and Scharbeutz. In addition, around 1.3 million over-night stays of tourists influence the character of the municipalities (Hofstede, 2004). Thus, the local economy is strongly dominated by coastal tourism. In addition, an estimated capital asset from about 1.8 billion Euros is provided in the two municipalities (Reese et al., 2001).

Initial problem

The coastal defence system of the area is described as inadequately, since only the spit system protects all inhabitants in the 12.6 square kilometres large coastal lowland (Hofstede, 2004). Although there are some local coastal defence structures such as groins, a beach wall and a concrete wall, a risk of flooding during extreme high water levels exists. It is not certain that the current flood defence could withstand a "*flood of the century*" with water levels of 2.1 meters above MSL (Hofstede, 2004). Statistically, this extreme water level has, in the present situation, a return interval of about 80 years. If MSL rises by 0.5 metres, which is a realistic scenario for this century (IPCC, 2007), the statistical return period would diminish to about 10 years (Hofstede, 2004).

Since more than 40 years it was discussed in the municipalities of Timmendorfer Strand and Scharbeutz, if and in what way measures of coastal defence should be conducted (Kaul and Reins, 2000). On the one side of the discussion were municipalities, which were responsible for flood defence. They pointed out the hazard and proposed technical solutions such as the built-up of a sea wall on the beach. On the other side of the discussion stood the local community. It met the proposal of the municipality with great scepticism because it was strongly depending on the beach as the main tourist attraction and therewith source of income (Hofstede, 2001).

Project aims

The aim of the project was to overcome this deadlock situation. It was obvious that this could only be achieved with active participation and acceptance of the local population. Taking this as aim, the two municipalities together with the Ministry of Rural Areas, Agriculture, Regional Planning and Tourism ('*Ministerium für Ländliche Räume, Landwirtschaft, Landesplanung und Tourismus;* MLR) and the Office For Rural Areas ('*Amt für ländliche Räume*'; ALR) of Schleswig-Holstein decided to develop an integrative coastal defence concept for the lowlands of Timmendorfer Strand and Scharbeutz (Hofstede, 2001). It was strived for a solution which protects human lives and human assets.

Project performance

In order to follow the performance of the project, it is crucial to mention a striking characteristic of the project. In the strict sense, the activities in Timmendorfer Strand and Scharbeutz are not a matter of pure ICZM. The major reason therefore is that coastal protection issues in Schleswig-Holstein obtain priority before other sectors such as tourism or nature conservation (see MLR, 2001). Therewith it is debatable to which extent the project can fulfil the 'I' of ICZM, thus to which extent the project can be of pure integrative nature. Consequently, one would have to speak about a practical measure of coastal protection using an ICZM approach. For reasons of

simplification, the project will be referred to as an ICZM project, but without neglecting its specific characteristic.

The project performance can be divided into six main steps (see Figure 15) , which are identification of technical and environmental basics, valuation of socio-economic parameters, sensitivity analysis, feasibility study, project approval procedure, and execution of measures (Reese et al., 2001).

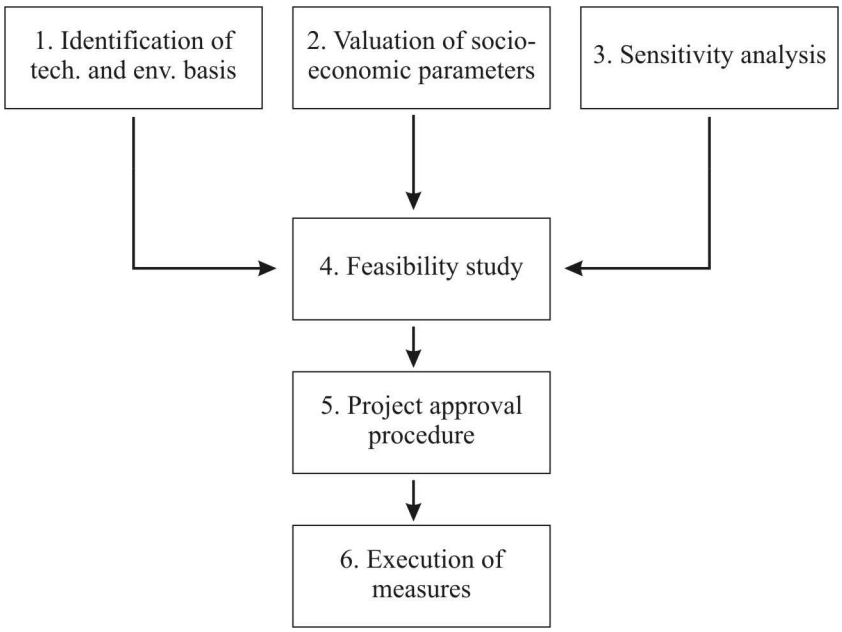

Figure 15: Schematic six-step project performance of 'ICZM-Bay of Lübeck' (according to Reese et al., 2001)

First step of the project was a stocktaking of technical and environmental basics. It comprises examinations of the natural and anthropogenic conditions in the field of hydrography and morphology and results in modelling potential flood plains of the investigation area. The result of the examination is that the coastal area of Timmendorfer Strand and Scharbeutz is significant endangered by storm surges. Further, humans lives and assets are highly endangered (see Reese et al., 2001).

Based on this result, an analysis of the precise socio-economic values was conducted (second step). This valuation calculated the monetary values of flooding risks on human lives and assets along the potential flood plains. For that purpose the number of endangered inhabitants, employment, tourist beds, and monetary values (such as housing, traffic sites, agricultural sites, and forest sites) were taken into consideration. Finally, an estimated capital asset from about 1.8 billion Euros is provided in the two municipalities (Reese et al., 2001).

The sensitivity analysis (third step) forms the heart of the project. It is based on cybernetically evaluations of complex systems according to Vester (2002). In Timmendorfer Strand and

Scharbeutz, a public meeting was organised by the mayors of the municipalities to which all affected persons as well as local boards and councils were invited. About 65 persons, mostly representatives from affected local interest groups and municipal representatives, attended the meeting (Hamann, 2007). After being informed about the problematic situation and the need for action, the sensitivity analysis was explained and conducted in two phases with the help of a professional and independent consultant company.

The first phase comprised five meetings (with 20-25 participants each) over a period of four month. The participants mapped the coastal system of Timmendorfer Strand and Scharbeutz in a conceptual model where the most important 17 variables (e.g. economic power, coastal protection, living) are pulled together (see Kaul and Reins, 2000). The model allowed analysing the interactions between the variables.

The second phase ran over a period of two months and comprised four meetings. It aimed at giving preference to one out of five coastal defence strategies developed. The range went from a zero option where no coastal defence is executed to a maximal option where a primary state dike is built on the beach (see Kaul and Reins, 2000). After the input of various defence strategies and an interlinkage of future sea level rise into the model, the impacts for each variable were simulated. These simulations formed the basis for discussions among all participants. These discussions finally led to the best option for the community: a mixed strategy where coastal protection and maintenance of natural scenery are combined (Hofstede, 2001).

The consensus of the sensitivity analysis formed the basis for the conduction of a feasibility study (fourth step). Therefore, four consultant offices were chosen to develop innovative ideas on an integrative coastal defence solution which fulfils the requirements of the sensitivity analysis. The award-winning solution envisioned a deep-grounded flood protection wall which fit to the characteristically scenery of the beach promenade. Only a peak of 80 centimetres should be visible above ground level by which one side of the wall should be covered visually by dunes and the other side constitutes the boundary of the beach promenade (see Hofstede, 2004).

The fifth step constituted a routine processing of a coastal defence project, namely approval process according to the Aquatic Law of Schleswig-Holstein (‘*Landeswassergesetz’*). As a result, sanction was given to the project application (Riemer, 2007).

Finally, the two municipalities Timmendorfer Strand and Scharbeutz started executing the measures (sixth step). The construction of about ten kilometres sea wall is not finished to date. One reason for the delay can be seen in changing requirements. New calculations hold the result that the sea wall has to be heightened from 80 to about 180 centimetres on a section of about 100 metres (Riemer, 2007).

5.2.2 Project evaluation

The general impression that arises due to 'ICZM-Bay of Lübeck' is that the project has undertaken various actions for each step of the evaluation framework (see Table 2). The outstanding feature of the project is the extensive and innovative participation procedure. It took place in each step of the evaluation framework and led to a high degree of acceptance amongst the local public (Hamann, 2007). Below, the project actions are summarised according to the six steps of the evaluation framework (see Table 2). A corresponding table with all results is presented in the appendix (see Table 10).

The elaborated identification of preconditions (step one) is the striking point of the project. As a starting point of the project the problem was defined by administrations in collaboration with the public (Hamann, 2007). Thereupon, a low number of enforceable management options was developed. Even though, the context of coastal protection issues was determined, all possible management options were open and consequently discussed by the stakeholders (Riemer, 2007). Furthermore, formal implementation could be fully answered (or was out of question) since responsibilities, tasks and funding of coastal protection measures in Schleswig-Holstein are clearly determined in a multitude of laws, regulations and directives (see MLR, 2001). The main target of the step is to arrive at all decisions by collaboration of technical authorities, municipal authorities, and the local public. That was reached by a transparent methodological approach, namely sensitivity analysis (Hamann, 2007). It led to wide acceptance of the results amongst the whole community of the municipalities (ibid.).

The assessment (step two) is closely connected to the first step. The two assessments conducted (technical and environmental basics, valuation of socio-economic parameters) build the basis for the following decision-making. The assessments were target-oriented and compact. Even though Hamann (2007) states they are sufficient, they bear the risk of disregarding ecological aspects. The benefits for participants are obvious: coastal protection and economic maintenance through tourism (Riemer, 2007). In the frame of the assessments no overall goal was developed in written form, which led to some space for individual interpretation (Hamann, 2007).

The preparation of a plan (step three) has its starting point in the first step of the project with the performance of the sensitivity analysis. In this frame, different scenarios, cost and benefits as well as alternatives were discussed among all participants (Kaul and Reins, 2000). After reaching consensus on one management option, a feasibility study was developed by a consultancy office. This document can be seen as an ICZM plan, even though it mainly consists of detail technical draws (see Hofstede, 2004). A strong point of the plan is the nomination of responsibilities and tasks (which is again out of question among coastal protection measures). A weak point displays the fact that no cooperation possibilities with other ICZM projects are mentioned. The project is not part of an ICZM umbrella and hence operates isolated.

The formal implementation (step four) of the project was well defined right from the beginning on since coastal protection measures are implemented in a hart way that means by laws, regulations and directives (see MLR, 2001).

Based on the formal implementation, responsibilities and tasks according to practical implementation (step five) are well defined. A municipal sea wall has to be planned, built up and maintained by water- and soil boards of the municipality after the principles of the Aquatic Law of Schleswig-Holstein (Riemer, 2007). In practice, the project is lacking in real-time execution of the measure (Hofstede, 2004). It started more than six years after the completion of the feasibility study. Furthermore, differences between the sea wall planned and sea wall built up, led to decreasing acceptance among the public (Riemer, 2007).

The project procedure was discussed in some articles (see Hofstede, 2004; Hofstede and Hamann, 2002; Hofstede and Schernewski, 2005), but a sufficient evaluation (step six) is not conducted up to date.

The strengths, weaknesses, opportunities, and threats of 'ICZM-Bay of Lübeck' are displayed in the table below (see Table 5).

Table 5: SWOT scheme of the project 'ICZM-Bay of Lübeck'

SWOT	Description
Strength	Active and very early involvement of stakeholders through innovative public participation proceedings lead to a high degree of acceptance. Systematic and transparent approach of public participation (Hofstede, 2004). Models, scenarios, and cost-benefit analysis were good approaches to convey impacts of potential flooding and planned measures to the public. Focus on coastal defence lead to target oriented and efficient discussions on feasible management options. Through formal implementation in coastal defence regulations, responsibilities, tasks, and funding could be defined.
Weakness	Space for discussions are predefined and therewith restricted. Low number of participants in comparison to people affected. Lack of an integrative nature since formal implementation in coastal defence sector lead to elimination of certain management options. Weak connection to other ICZM activities. Therewith the respective ICZM project operated isolated. Long time-lag between plan preparation and implementation (six years) lead to decreasing acceptance.

Opportunity	The initiative for ICZM should arise from a problem definition by local/regional level. Formal and methodological participation proceedings lead to high acceptance and transparency. Models, scenarios, and cost benefit analysis constitute a good basis for discussion and decision-making. Formal implementation of ICZM issues in coastal defence regulations, laws etc. assures funding and realisation.
Threat	Formal implementation in coastal defence regulations/laws/directives endangers the integrative approach of ICZM. Cancelling of project execution because of a long time-lag from planning.

5.3 The case study of Western Zeelandic-Flanders

5.3.1 Project basics

Project region

The project is located in the south of the Netherlands bordering Belgium (see Figure 16). It is part of the estuary of River Rhine and Schelde. The project region is called Western Zeelandic-Flanders (‘*West Zeeuwsch-Vlaanderen’*) and strongly characterized by the influence of the sea. Historically, the estuary always has been an area where the quarrel between land and water has taken place very intensively. Land has been reclaimed, then swallowed by the sea again, before being reclaimed again (Knuijt et al., 2000).

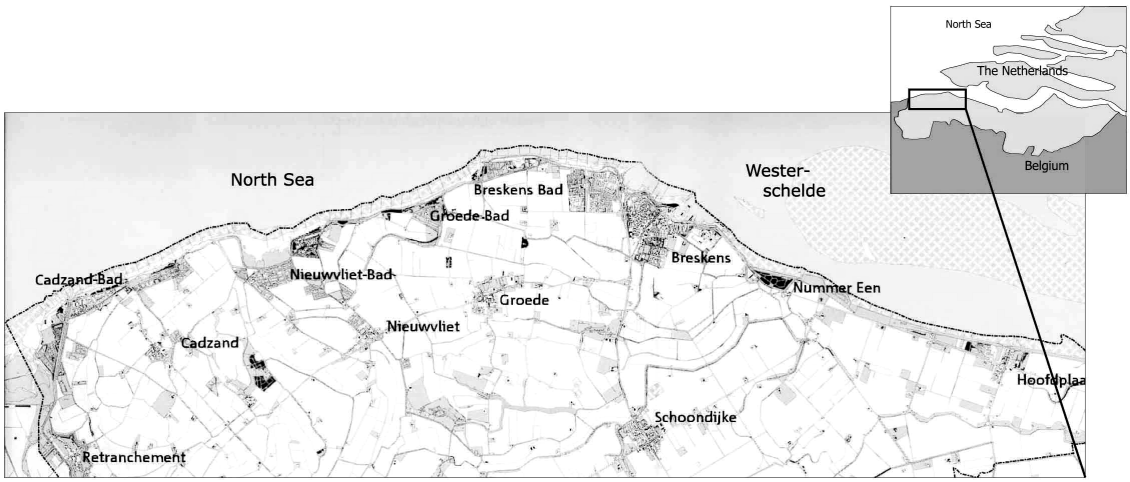

Figure 16: Project region of ‘ICZM-Western Zeelandic-Flanders’ (according to Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004)

This permanent change has given the coast of West Zeelandic-Flanders its today's characteristic appearance of open landscape with coastal dikes and dunes as well as crisscrossing ditches. According to Knuijt et al. (2000) the coastal region today can be divided into two different areas. The North Sea coast (from Cadzand to Breskens) and the Westerschelde coast (from Breskens to Hoofdplaat). The conditions on both sides are very different. The North Sea coast is characterized by beaches, dunes, nature reserves and recreation, whereas the Westerschelde coast is formed by dikes and agricultural land. Thus, an intensive versus an extensive touristic area (ibid.).

Around 25 thousand inhabitants are living in the project region. In the holiday season the 'population' triples up to 75 thousand (Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004). Yearly around 2.5 million tourists stay overnight. One out of four persons in Western Zeelandic-Flanders is engaged in the tourism business (Bulukin, 2006). Therewith, tourism plays next to agriculture the major economic role in the region (Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004).

Initial problem

The problem of the region can be divided into seaward and landward conditions. Concerning seaward conditions, rising seawater level is regarded as main problem (Knuijt et al., 2000). Research from 2003 hold the result that a weak link in the costal defence system is situated between Het Zwin and Breskens (MinVenW, 2003).

Concerning landwards conditions, the main problem is seen in the weak development of employment in the sectors of agriculture and tourism (Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004). Furthermore, the region has to cope with an aging rate that is higher than elsewhere in the Netherlands, and with migration of young people out of the area (ibid.). It is stated that as a consequence, the living quality of the region is strongly decreasing (ibid.).

Project aims

The main aim of ICZM in Western Zeelandic-Flanders is the *"development and enlargement of its natural capital to release an impulse for the tourist-economic sector"* (Knuijt et al., 2000). This process should be coupled to a safe coastal protection integrating the most important economic and social concerns (ibid.).

Project performance

The ICZM process in Western Zeelandic-Flanders can be divided into three phases: development of an ICZM vision, development of sub-projects and execution of coastal projects (see Figure 17).

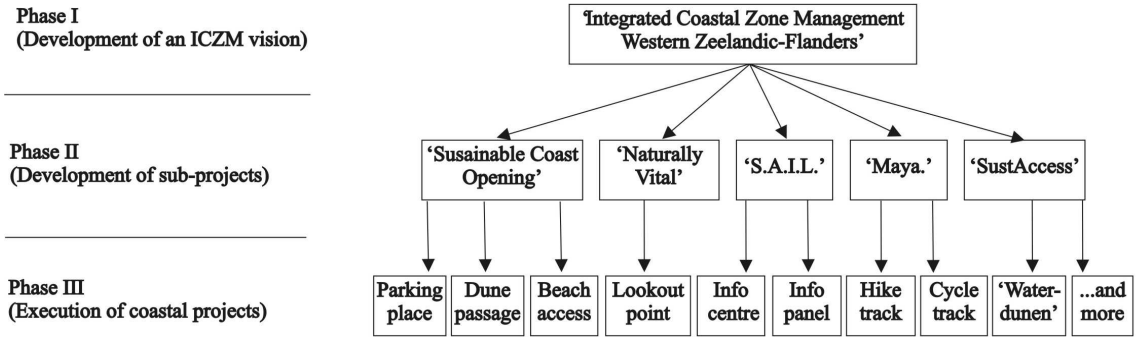

Figure 17: Three phases of ICZM in Western Zeelandic-Flanders (left row) and their associated documents/activities (right row, in boxes) explained in text form below

The first phase (see Figure 17) of ICZM in Western Zeelandic-Flanders started in 2000. A project team leaded by the municipalities of Oostburg and Sluis together with a sounding board of around 40 persons articulated a vision for the coast, which resulted in an ICZM plan for the coast, namely 'Integrated Coastal Zone Management Western Zeelandic-Flanders' ('*Integraal Kustzone Beheer West Zeeuwsch-Vlaanderen')* (see Knuijt et al., 2000). The document constitutes a legal municipal framework for future coastal development in which coastal protection, environmental and economic enhancements are priority goals. They should be achieved by taking action primarily in the field of coastal safety in combination with recreation and tourism (ibid.). The ICZM plan sets out two main principles. First, a broadening of the coastal zone to provide space for coastal defence and recreation, and second, a zoning of the coast in calm or busy segments in order to support the development of touristic or nature conservation areas (ibid.).

Based on this initial ICZM plan, five coastal sub-plans were developed which constitute the second phase of ICZM in Western Zeelandic-Flanders (see Figure 17). 'Sustainable Coast Opening' ('*Duurzame Kustontsluiting*') is a further development of the main principles of the ICZM vision. It provides four priority areas of the region where several actions such as parking places, dune passages and beach accesses are presented (Knuijt et al., 2002). 'Naturally Vital' ('*Gebiedsplan Natuurlijk Vitaal*') is an extensive development plan for executing coastal measures. The plan aims at giving an impulse for the economic sector and enhancing spatial quality such as nature and landscape. It builds the basis for collaboration of administrations and

private enterprises (Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004). The other remaining three plans (S.A.I.L., Maya, and SustAccess) are embedded in the European INTERREG program (see European Commission, 2006). 'S.A.I.L.' ('*Schéma d'Aménagement Intégré du Litoral*') was formed in order to help managing issues affecting the coastlines and communities bordering the Southern North Sea area. The plan for Western Zeelandic-Flanders includes the opening up of the coast to visitors on foot or bike, extended parking facilities, improved accessibility, tourist development of the beachfront, and the broadening of the coastal zone via coast corridors (S.A.I.L., 2003). 'Maya' stands for 'Marina and Yachting in the Lower North Sea, the Channel Area and the Irish Sea'. This plan aims at the construction of a marina at Sluis on the historic location, a lock, and a port of transit at Cadzand and the realisation of a waterway connection between this lock and the marina. The plan provides leads for urban renewal, accentuation of cultural-historical elements, nature development, recreation and tourism, as well as integral water management (Maya, 2005). Western Zeelandic-Flanders also participated in 'SustAccess', which stands for 'Sustainable Accessibility between Hinterlands and Gateways around the North Sea' (SustAccess, 2006). The major issue of this plan is to decrease the use of cars in the coastal area of the North Sea. Therein new road infrastructure should be developed to separate cars from bicycles (SustAccess, 2005).

In the frame of these five sub-plans a multiplicity of projects were executed in the region (phase three), such as parking places, dune passages, beach accesses, lookout points, information centres or information panels (see Figure 17). A good overview of all running and planned projects gives the municipality of Sluis (see Gemeente Sluis, 2007).

5.3.2 Project evaluation

The project 'ICZM-Western Zeelandic-Flanders' conducted for each of the six steps of the evaluation framework for ICZM projects (see Table 2) numerous actions. Thereby it becomes apparent that throughout the entire project most actions were undertaken in reference to practical execution of coastal measures. It seems most important for the project initiators to arrive as soon as possible at practical measures. Consequently, elaborated execution plans with a multitude of projects and detailed information on responsibilities and tasks were developed (see Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004). That in turn led to a lack of investigating scientific basics. The reason therefore can be seen in its relatively time-consuming nature and its limited use for practical execution of ICZM measures (Maenhout, 2007). Below, the evaluation results of 'ICZM-Western Zeelandic-Flanders' are described step by step according to the six steps of the evaluation framework (see Table 2). All findings in detail are displayed in the appendix (see Table 11).

The project started with elaborated identification of preconditions (step one). Problems of coastal protection, declining population and decreasing employment were recognised and defined by technical administrations (ten Braak, 2007). Subsequently, these problems were discussed with participants of the coast in the frame of a "*start document*" (Knuijt et al., 2000). However, the characteristic precondition of Western Zeelandic-Flanders is the existence of a 'weak link' in the coastal defence system (MinVenW, 2003). Since coastal protection has priority in the Netherlands, it was clear that other sectors among the coast has to subordinate their interests (MinVenW, 2000). Taken this condition as a basis, enforceable management options were discussed within a project group of six persons and a sounding board of about 40 persons (Maenhout, 2007). Hence, all unenforceable management options were eliminated. Concerning formal implementation it was clarified that the ICZM process should build up new structures such as a new plan, office and working position. The municipality aimed at implementing ICZM by setting up a plan which get adopted by the municipal council. Therewith the ICZM plan should build a framework of examination for all following coastal developments in the region (ten Braak, 2007).

According to the second step (assessment) it becomes apparent that almost no new environmental, social, and institutional assessments were conducted. Referring to Maenhout (2007) that was not necessary since the problem and the solution was defined well and no new data was urgently necessary. The main benefits of the ICZM project (coastal protection and enhancement of recreation) could be defined and conveyed to the stakeholders (ten Braak, 2007).

The ICZM plan developed (step three) constitutes an umbrella for future ICZM activities (Maenhout, 2007). It does not constitute a precise and sectoral plan of execution although it proposes an execution outline for four different projects (Knuijt et al., 2000). Moreover, it provides a future vision for good coastal development (ibid.). Since the development of the ICZM plan started together with policy makers from regional, provincial and national level and in collaboration with a sounding board of about 40 persons, acceptance could be taken forward in the region (ten Braak, 2007). The plan mainly regards the terrestrial coast. The marine coast is only considered by means of impact on coastal security and tourism boot trips (Knuijt et al., 2000).

The formal implementation of the ICZM activities (step four) was organised and promoted by the municipality Sluis. The municipal council adopted the ICZM plan whereby it built a framework of examination for all further coastal developments in the region (ten Braak, 2007). ICZM is pushed forward through the municipality since. It could be arranged by their engagement that the plan received attention and future planning has to be harmonised with the principles of the plan (ibid.). In doing so, ICZM is not fully integrated in existing national or

regional structures. New structures were built up such as a new office and new working positions (ibid.). However, the content of the plan could be integrated in several European INTERREG projects such as 'S.A.I.L.' and 'Maya'.

The very strong point of 'ICZM-Western Zeelandic-Flanders' is the execution of measures (step five). The ICZM plan led to various plans of execution such as 'Naturally Vital', 'Sustainable Coast Opening', and 'SustAccess'. These plans clearly define numerous coastal projects including responsibilities and tasks (Boomert, 2007). On account of this, a multitude of projects were and are executed such as '*Waterdunen*', a showcase of national importance (Provincie Zeeland, 2007). In Western Zeelandic-Flanders many coastal projects are noticeable which can be associated to the ICZM process because of various signboards and info panels. According to Maenhout (2007) it is of great importance that dwellers and visitors of the region recognise certain ICZM measures in order to show tangible and practical benefits of ICZM. Especially great measures such as '*Waterdunen*' are expected to influence the public opinion on ICZM very positively (ibid.). Furthermore, a contact point for practitioners was established: the project office of 'Naturally Vital', which is manned with a full time position (ten Braak, 2007). On request, the staff of the office is available for on-the-spot support (ibid.). Moreover, experienced and involved entrepreneurs offer help and advice (Boomert, 2007).

The evaluations (step six) conducted were internal and irregular.

The strengths, weaknesses, opportunities, and threats of 'ICZM-Western Zeelandic-Flanders' are displayed in the table below (see Table 6).

Table 6: SWOT scheme of the project 'ICZM-Western Zeelandic-Flanders'

SWOT	Description
Strengths	The pre-determination that ICZM has to be integrated in coastal defence priorities, led to precise and target-directed discussions on limited management possibilities. Strong public and administrative support of ICZM since the problem definition (flooding and weak development of employment in tourism) came out of the region. Project coordination group of six persons and sounding board of 40 persons were good working platform to carry ICZM into the region. The individual engagement of several persons/administrations was fruitful referring to the forthcoming of the project. Efficient division into three phases of ICZM, namely (1) ICZM as a vision and umbrella for the region, (2) Integration of this vision in sub-projects, and (3) execution of measures. A multitude of measures were executed at the coast and showed dwellers and visitors of the region practical benefits of ICZM. The huge realisation of '*Waterdunen*' functions as a regional and national ICZM eye catcher and provides an impressive showcase of ICZM's benefits.
Weakness	'ICZM-Western Zeelandic-Flanders' was not purely integrative since coastal defence had priority and other sectors among the coast have to subordinate their interests. New structures and capacities (plans, office, working places) were build-up which cost money. Since it is concentrated on execution of ICZM measures mainly, research and assessments on ICZM were limited. Marine coast is only considered by means of coastal security.
Opportunity	Integration of ICZM in coastal defence issues can provide a straight forward approach in order to execute management options. Regionalisation of ICZM, that means giving responsibilities and leeway to the regions, can lead to a pushing forward of ICZM. ICZM should constitute an overall vision for a region, but not a panacea for all problems. Under this umbrella, practical ICZM measures should be executed. Executions of measures (especially eye catching showcases) are the most important tool to carry benefits of ICZM into the region.

Threat	By setting sectoral interests under the priority of coastal defence, integrative nature of ICZM is at risk. Strong target-oriented approach holds the risk of being biased and therewith less integrative and/or participative. Responsibility and leeway is not given to the region. Persons and administrations in power are not interested in pushing ICZM. Funding for build-up of new structures (e.g. plans, office, and working place) is not available.

5.4 Intermediate summary

This chapter focussed on what Germany can learn from regional/local ICZM projects in order to bridge its gap 'lack of best-practice experience and knowledge-transfer'. In order to answer this question, three ICZM projects ('ICZM-Oder estuary', 'ICZM-Bay of Lübeck' and 'ICZM-Western Zeelandic-Flanders') were examined according to a methodical evaluation framework. On the results of the evaluation an intermediate summary can be provided.

All three projects have different starting points. 'ICZM-Oder estuary' is mainly a regional research project dealing with gaining knowledge rather than putting measures into practice. 'ICZM-Bay of Lübeck' is more likely a local practical measure of coastal protection using an ICZM approach, namely the sensitivity analysis as a tool for inventive participation. 'ICZM-Western Zeelandic-Flanders' relates to a huge region, where practical executions of numerous ICZM measures are most important and pushed forward.

All projects assessed the identification of precondition as the most important aspect of an ICZM project. Therewith, they tend to build ICZM actions on a stable and 'real-world' fundament. First, it was of high importance that coastal stakeholders were aware of a coastal problem. Second, the support of stakeholders from administrations and the public was essential for the acceptance of ICZM and the success of the projects. According to experiences gained in the Oder estuary, it was important to emerge key stakeholders which have a meaning and influence beyond their function. They are able to fund and implement ICZM issues. A practical tool for an innovative participation procedure holds the sensitivity analysis of 'ICZM-Bay of Lübeck'.

The question how to implement ICZM in the respective region is answered differently. 'ICZM-Oder estuary' made good experiences with the Regional Agenda. It was a suitable umbrella to reach political commitment. The activities of the Agenda office led to new working-, communication-, and information structures within the region. 'ICZM-Bay of Lübeck' and 'ICZM-Western Zeelandic-Flanders' integrated aspects of ICZM into coastal defence measures. On the one hand that led to a subordination of ICZM aspects in coastal defence measures. On the other hand funding for these measures was regulated by law and was consequently taken

over by higher administrations. The division of the ICZM process in Western Zeelandic-Flanders is viewed as a practical straight forward approach. First, creating an overall ICZM vision as umbrella for later ICZM activities, second, integrating this vision into sub-projects such as INTERREG programs, and third, executing coastal measures.

All projects assessed the execution of ICZM measures as very important. Therewith, the practical use of ICZM could be transferred to dwellers and visitors. Especially the realisation of huge, eye catching measures functioned as efficient tool to carry the benefits of ICZM into the region. According to experiences in 'ICZM-Bay of Lübeck' it must be pointed out that a long time-lag between plan preparation and execution of the measure can lead to decreasing acceptance among the public.

6. Guidelines for ICZM in Germany

This chapter refers to research question four (see Chapter 1.7). The results of the previous three chapters were combined in order to extract guidelines for ICZM in Germany. More precisely, the gaps of the German ICZM process (see Chapter 1) were compared with experiences of other European ICZM processes (see Chapter 1) and regional/local ICZM projects (see Chapter 1). Based on these findings, guidelines were derived according to the principle of abstracting (see Chapter 2.4).

In order to develop target-oriented and tailor-made guidelines, it was necessary to concretise the EU definition of ICZM towards German conditions and formulate overall targets of the German ICZM process.

Referring to the definition, ICZM in Germany is a regional and local management process for resolving economic, environmental, and social conflicts in the coastal zone in an integrative and iterative manner. ICZM is based on the principles "*sustainable development*", "*integration*", "*participation and communication*" as well as "*experience transfer*" (BMU, 2006). Thereby, coastal zone can be defined as "*EEZ, the coastal sea (twelve sea-mile zone), the transitional waters in accordance with the Water Framework Directive (WFD), the areas adjoining estuaries and influenced by the tides as well as the adjoining rural districts and respective administrative units on shore. The relevant scope is defined by the interrelationships existing in each individual case*" (ibid.). However, the federal state and the national level play an important role for ICZM in Germany. They have to establish the principles of ICZM at all planning and decision-making levels and coordinate the nationwide ICZM process.

In the first instance ICZM is regarded as an approach that takes place at the regional level. There it should build an umbrella for various local projects. In the second instance, ICZM ought take place at the federal state and (supra-) national level, where all ICZM regions and activities have to be organised and connected with each other. Since it is not intended to build up new structures, great importance is given to aspects of communication and information-transfer.

Based on this definition and the gaps of the German ICZM (see Chapter 3.1), the following targets for the German ICZM process could be formed:

1. Establishing systematic instructions for practitioners at regional and local level in order to execute ICZM, with the sub-targets:
    - providing a regional umbrella and supporting the execution of precise measures under it,
    - providing a multi-sectoral platform for cooperation, communication and experience-transfer,
    - providing and connecting relevant data for regional stakeholders free and easily available, and
    - raising awareness for regional economic, environmental and social problems and solutions to resolve them.
2. Allocation of responsibilities at national-, federal state- and regional/local level
3. Identification of tasks at national-, federal state- and regional/local level
4. Coordination of top-down and bottom-up activities

It is intended that these targets are reached by following the guidelines below. The guidelines are presented according to the administrative levels of Germany, thus guidelines for regional/local, federal state, and national level. The table below gives an overview of all guidelines (see Table 7).

Table 7: Overview of guidelines (first row) in relation to their associated administrative level (second row), gaps of the German ICZM (third row), and case studies conducted (fourth row)

Guideline	Associated		
	level	gap	case study
Problem recognition	Regional level	2	Oder estuary, Bay of Lübeck, Western Zeelandic-Flanders
Identification of preconditions		2	Oder estuary, Bay of Lübeck, Western Zeelandic-Flanders
Preparation of a plan/strategy		2	Bay of Lübeck, Western Zeelandic-Flanders
Execution of measures		2, 6	Oder estuary, Bay of Lübeck, Western Zeelandic-Flanders
Evaluation		2	Oder estuary
Establishment of ICZM Coordination Points	Federal state level	1, 3, 4	Belgium, Western Zeelandic-Flanders
Definition of overall targets	National level	1, 5	Netherlands
Development of indicators		1	Belgium
Bringing forward the paradigm shift of spatial planning		1	Netherlands, United Kingdom

6.1 Guidelines for the regional and local level

The following five guidelines are targeted at regional and local practitioners. They form a basis for organising and structuring regional ICZM activities at Germany's coasts. Regional and local practitioners could follow these guidelines in order to organise and execute a new ICZM project or enhance a running ICZM project. The guidelines for the execution of an ICZM project are embedded in a five-step-scheme (see Figure 18). Thereby, each guideline represents one step of the scheme, which is (1) Problem recognition, (2) Identification of preconditions, (3) Preparation of a plan/strategy, (4) Execution of measures, and (5) Evaluation. The circulating arrow illustrates the iterative approach of regional ICZM.

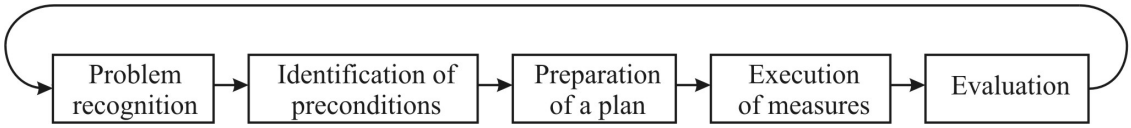

Figure 18: Five-step-scheme describing the aspired stepwise organisation of a regional/local ICZM initiative in Germany

Below, each of the five steps is described in detail in terms of a guideline. In addition, grey boxes represent best-practice examples from the three case studies conducted.

6.1.1 Problem recognition and definition

In order to start a regional ICZM initiative, it is essential that regional stakeholders from administrations, politics, and the public recognise an economic, environmental, or social problem among the coast. It is important that the recognition primary comes from these regional stakeholders themselves. Therewith, the regional acceptance for ICZM can be enhanced, which can be assessed as a basis for successful ICZM. Coastal management activities, where the problem recognition does not arise from the region itself, but from the outside, hold the risk of low regional acceptance (see Chapter 5.1.2). Examples have shown that the primal recognition and definition of coastal problems by technical administrations is experienced as a straight forward approach. That means, it often leads to seriously discussions and if necessary modification, change, or abandonment of the problem by these administrations in collaboration with regional stakeholders (see Chapter 5.2.2 and 5.3.2).

Based on the recognition, the problem has to be defined by all affected and interested stakeholders. It is recommended to put the definition, agreed by all stakeholders, down on paper. In case of upcoming difficulties regarding the realisation of the project, the written start document can serve as an important and strong paper of orientation (see Table 11). If a couple of problems among the coast appear, it is of great importance to choose a particular issue or

problem situation to address. The more specific the problem definition, the better are the opportunities for successful ICZM.

It has to be stressed, that ICZM should not be understood as a general working panacea for all fundamental regional problems such as a high unemployment rate combined with economic and demographic decrease. ICZM certainly tackles these problems, but a regional ICZM approach might be overloaded with the claim of solving all problems too easy (see Chapter 5.1.2). An oversized and unrealistic target holds the risk of being less constructive since it is not based on 'real-world' conditions.

Box 1: Best-practice example of 'problem recognition and definition'

Regional steering of national problem definition

In the case study of Western Zeelandic-Flanders (see Chapter 5.3) the initial problem recognition rose from the Dutch Ministry of Transport, Public Works and Water Management in 2000. They published a study, which presented the existence of two 'weak links' in the coastal flood defences as well as the risk of increasing storm damages in seafront settlements along the coast of Western Zeelandic-Flanders (MinVenW, 2003).

In order to influence and steer the national planning towards the regional needs and problems, the relevant municipal authority Sluis developed an integrated planning study. Its issue was not only to strengthen the coastal flood defences, but also to improve the spatial quality of the areas. Therefore, the main problems of the region were recognised and defined by technical administrations first: coastal protection, declining population and decreasing employment in tourism and agriculture.

Subsequently, these problems were discussed with key-participants of the coast. A project team leaded by the municipalities of Oostburg and Sluis together with a sounding board of around 40 persons (consisting of representative stakeholders such as municipalities, water boards, beach pavilion owners, recreation entrepreneurs) discussed the main problems of the region. Various meetings resulted in a shared problem definition of the coastal region and furthermore in a shared vision for the coast (see Knuijt et al., 2000).

According to ten Braak (2007) these problems agreed on in the starting phase, were accepted among most of the stakeholders. That again led to a wide support of regional ICZM activities (ibid.)

6.1.2 Identification of preconditions

Among all coastal regions of Germany a multitude of legal regulations, networks, and structures are present. Furthermore, coastal problems and conflicts vary from region to region. Consequently, each region demands for a different approach in order to tackle its problems. For this reason the identification of preconditions is considered as the most important step for an ICZM project in Germany (see Chapter 5.1.2). The success of an ICZM project depends on how efficient one could build it on existing preconditions. Because of almost uncountable varieties of preconditions among German regions, it does not seem possible to formulate an all-embracing guideline, which names specific activities that have to be undertaken by a definite person/institution in an explicit order. In this regard, the aspects below constitute a compilation of aspired activities.

All regional/local ICZM projects conducted during the study at hand, assessed the identification of relevant stakeholders from administrations, politics, organisations, business and the public as the most important initial activity. For this reason, a stakeholder analysis should be conducted in the first instance. It ought focus on existing stakeholders, their responsibilities, and how they are connected which each other.

Based on these findings, it appears essential to involve relevant stakeholders into the decision-making process of the ICZM project right from the beginning. Thereby, it is important to involve key stakeholders that have a meaning or influence beyond their function (see Chapter 5.1.2). They are able to fund and implement ICZM issues. Especially stakeholders from the administrations of environment, transport, and spatial planning play a decisive role since these are the sectors where ICZM is primarily implemented in Germany (Schernewski, 2006). Furthermore, the regional key policy-makers of these sectors are viewed as very important, since they have the power to bring ICZM on the political agenda (see Table). Through strong and early involvement of regional stakeholders, the direction of the ICZM project can be steered according to the stakeholders' concern. On the one hand, this early involvement should lead to early political commitment. On the other hand, it has a great potential to result in primary benefits for the regional population and a wide acceptance for the ICZM project. Stakeholders from various sectors should be invited to regular meetings and discussions. These meetings should be moderated by a chair person and consist of an articulated and structured programme.

In this context it is essential to discuss possible management options together with all stakeholders. If the number of all stakeholders is too high not manageable any more, it is possible to form a sounding board of important key stakeholders (see Chapter 5.3.2). It is recommended to narrow down possible management options as far as possible. Unenforceable management options should be eliminated at this time in order to save energy and fund (see Box 2). Good tools to discuss management options are conceptual models. It is advisable to use them

wherever it is necessary to visualise primary characteristics of a coastal zone in relation to occurring conflicts and their impacts. A further specification of the model could serve as a tool for discussing the outcome of certain management options in order to find one option accepted by the majority (see Chapter 5.2.2).

One of the most important issues in the phase 'identification of precondition' is to resolve the issue of formal implement of ICZM. It is essential to check possibilities for formal implementation at a very early stage in order to build ICZM actions on a stable and 'real-world' fundament. The main question that arises is which existing structure is sufficient to integrate the principles of ICZM most efficiently. Since there are almost uncountable varieties of existing structures (such as networks), the issue of formal implementation strongly demands for a regional and tailor-made approach. Moreover, it asks for creative and innovative thinking. The maxim of formal implementation is to identify existing structures and integrate ICZM.

The Regional Agenda 21 holds an auspicious chance for formal implementation of ICZM in Germany (see Chapter 5.1.2). It traces back to the Rio Declaration (United Nations, 1992) and is based on the principle of sustainable development. That shows that the Regional Agenda 21 processes are strongly compatible with ICZM processes. The Regional Agenda 21 activities have a great potential to build up working-, communication-, and information structures within a region and lead to political commitment. For the case of Germany, the numerous existing Regional Agenda delegates present a suitable platform to support and spread the principles of ICZM towards all coastal inhabitants. It can be suggested to set-up a Regional Agenda 21 office, where the information and data of the region come together and can be communicated with all regional stakeholders (see Chapter 5.1.2). Furthermore, it is advisable to set-up an informal regional Agenda 21-Forum, with annual or semi-annual meetings. It could link all existing ICZM activities and serve as a basis for ICZM. It might improve the information flow and public participation in regional decision-making processes (see Chapter 5.1.2). Specific user-conflicts demand for small and temporary forums. Both forums should meet regularly, be supported by a group of experts, and moderated externally.

Other supposable structures for implementing the principles of ICZM are large scale protectorates along the coast such as Natural Park ('*Naturpark*'), or Biosphere Reserve ('*Biosphärenreservat*').

Thereupon it is important to look for funding options, if possible long-term funding. Two funding options for ICZM seem to be obvious. At first, funding options via EU sponsorships such as INTERREG, LIFE, LEADER, or PROFIL, whereas the largest amount is provided by INTERREG IVc programme in which coastal management is explicitly nominated (European Union, 2007). Another funding possibility for ICZM activities provides the 'European Fisheries Fund' (EFF). It is designed to secure a sustainable European fishing and aquaculture industry

(European Commission, 2007a). Since the EFF aims at helping endangered fishery communities to diversify their economic base, funding possibilities for ICZM are given. In order to get support from EU, the ICZM process often has to get connected to international coastal/maritime research issues. It is possible to find funding options for local projects which go along with principles of ICZM. These projects ask for region-specific solutions, at which especially regional organisations and economy should be involved by cooperation (see Chapter 5.3.2). The Dutch Coastal Zone Management Centre (CZMC) provides a web based tool called 'ICZM Funding Guide' (CZMC, 2003). It aims at providing up-to-date information on funding sources for projects in the field of ICZM. "*Most of these funding programmes are not ICZM specific but rather support initiatives that are in one way or another related to sustainable, integrated management and planning of the European coast*" (ibid.). However, the website provides a first introduction of funding possibilities.

Box 2: Best-practice example of 'identification of preconditions'(according to Hofstede and Schernewski, 2005)

Participation by conducting a sensitivity analysis

An innovative example of intensive and early participation in order to identify preconditions comes from the case study 'ICZM-Bay of Lübeck' (see Chapter 5.3). As a starting point, a public meeting was organised by a consultant, to which all affected persons as well as local boards, councils, etc. were invited. After being informed about the problematic situation (raising sea-level rise and increasing risk of flooding) and the need for action, not the solution, by the coastal defence administration (initiator), the people took part in a number of meetings and conducted the sensitivity analysis:

- Characterisation of the system with appropriate variables,
- Definition of the effects of the system variables upon each other,
- Definition and (semi-)quantification of a subsystem that zooms in on the problem/action,
- Definition of, and simulation for different scenarios that focus on the problem/action,
- Discussion of the results and establishment of recommendations by the working group (WG).

The sensitivity analysis consisted of nine meetings of the WG and two public meetings. In the first project meeting a general brainstorming on possible system variables took place. In total, 47 variables were listed and roughly related to each other. During the next meetings the number of variables was systematically reduced to 17 in order to achieve a 'workable'

system. Further, the interrelations between the variables were described and the quantified. Examples for variables are economic power, (quality of) tourist services, (degree of) employment, (quality of) coastal protection, (quality of) living and (security of) people. In the further course, the 17 original variables were summarised into seven 'key variables' which are relevant to coastal defence.

The second phase of the sensitivity analysis concentrated on the possible effects of different coastal defence strategies on the system. Five possible strategies had been defined in the fifth meeting. The range went from a zero option where no coastal defence is executed to a maximal option where a primary state dike is built on the beach. Based upon an operational model, the consultants simulated the effects of the increasing risk of flooding on the system in 15 rounds of five years for each of the coastal defence scenarios. During the last meeting, the results of the simulations were presented and discussed with the WG. The discussion resulted in the following common recommendations:

- the WG supports the results of the sensitivity analysis and the model,
- the WG recommends a combination of coastal protection and flood defence, and
- the WG demands further active participation in the process as a qualified group.

6.1.3 Preparation of a plan/strategy

In a next step, an ICZM plan/strategy should be developed. It should cover one region and build an umbrella for ICZM projects. Thereby it should be proportioned as wide as possible in order to create enough space for later activities (see Chapter 5.3.2). Basically, it should comprise the following aspects:

- overall concept or vision for the region,
- multi sectoral orientation,
- identification of precise benefits of ICZM,
- inclusion of marine and terrestrial coast,
- development of scenarios and/or alternatives, as well as
- classification of varying areas and emphasis of overall management options.

If necessary, stocktakings and assessments should support the plan preparation. They ought to be conducted with regard to the problem definition. Hence, they have to be problem-orientated. It is important to hold stocktaking and assessment as low as possible, but as comprehensive as necessary (see Chapter 5.2.2).

Stakeholders have to be actively involved in the process of plan preparation. Since the development of an ICZM plan is an iterative process, stakeholders should regularly be asked for review and response (see Chapter 5.2.2).

Finally, the ICZM plan/strategy must be accepted and formally adopted by decision-makers. According to Cicin-Sain and Knecht (1998) chances of timely approval are increased if the programme:

- uses clear and understandable terms,
- describes the benefits in tangible and meaningful terms,
- is endorsed by all stakeholders,
- is known to key politicians which have received regular updates on the ongoing process of its formulation, and
- illustrates the involved costs and ways to cover them.

Box 3: Best-practice example of 'plan/strategy preparation'

Development of an ICZM vision

The ICZM process of the case study 'ICZM-Western Zeelandic-Flanders' started in 2000 (see Chapter 5.3). A project team leaded by the municipalities of Oostburg and Sluis together with a sounding board of around 40 persons articulated a vision for the coast, which resulted in an ICZM plan for the coast (see Knuijt et al., 2000). The document constitutes a legal municipal framework for future coastal development in which coastal protection, environmental and economic enhancements are priority goals. They have to be achieved by taking action primarily in the field of coastal safety in combination with recreation and tourism. The ICZM plan sets out two main principles. First, a broadening of the coastal zone to provide space for coastal defence and recreation, and second, a zoning of the coast in calm and busy segments in order to support the development of touristy or nature conservation areas.

The plan was published and financed in the frame of the INTERREG project 'S.A.I.L.'. It comprises a 130 pages thick booklet with a multitude of coloured pictures, collages, schemes, and maps next to written descriptions.

Figure 19: Extracts of a development plan (left) and a visual vision for the coast (right) from the ICZM plan of Western Zeelandic-Flanders (according to Knuijt et al., 2000)

The ICZM plan does not constitute a precise and sectoral plan of execution. It constitutes an umbrella for future ICZM activities. Furthermore, it provides a future vision for good coastal development. The concretion of the plan was realised through two further steps, namely (1) integration of the ICZM plan and vision in local specific sub-projects and (2) execution of coastal measures (see Figure 17).

6.1.4 Execution of measures

Measures are noticed by the people of a region. That is the simple reason why the execution of measures is of great importance for regional ICZM processes. If people notice that particular measures are realised along their coast, the acceptance for ICZM can be enhanced. Coastal measures are experienced as tangible and practical benefits of ICZM.

In practice, these measures have to fit under the umbrella of the regional ICZM plan/strategy or vision (see Box 3). That means, they should tackle the main ICZM related problems that were defined earlier during the process. In addition, they have to run through usual project approval procedures (e.g. '*Planfeststellungsverfahren*'). Since these procedures often lack desirable ICZM aspects (such as very early participation and co-determination of persons affected), possibilities for integrating ICZM aspects should be checked, and if applicable accomplished.

In the beginning it is important that responsibilities and tasks of the execution are clearly defined. Therefore, it seems adequate to draw up precise and local-specific plans, strategies, timetables or technical drawings (see Chapter 5.2.1).

Before the execution of the measure, precise impacts have to be presented to all stakeholders, especially to affected ones. If necessary, technical, visual, or graphic support should be used to present clearly the changes and to avoid later afflictions or caveat.

According to the experiences gained in Western Zeelandic-Flanders it is central to execute at least one outstanding measure, a success, quite in the beginning. It holds the potential to keep a

positive ICZM experience in people's mind. Furthermore, it can be suggested to execute eye catching ICZM showcases since they are experienced as politically and socially efficient (see Chapter 5.3.2).

It is recommended that the execution of a measure follows prompt on its planning. Experiences show that a six year time-lag between planning and execution lead to a decreasing acceptance among the stakeholders (see Chapter 5.2.2).

Before and during the execution, availability of coastal information for practitioners has to be ensured. A useful experienced method is information dissemination via online information systems, newsletters, and workshops (see Chapter 5.1.2). These kinds of continuous publicity are important in order to keep the regional initiative in people's mind.

Box 4: Best-practice example of 'execution of measures' (according to Thamm et al., 2007)

Publicity as a measure

The project 'ICZM Oder estuary' (see Chapter 5.1) designed a regional information system, which constitutes a measure of the project. The regional information system addresses scientists, authorities, and the local population as well as tourists and visitors. Therefore it is designed as a generally accessible regional internet platform. It offers a wide range of regional information and data, such as scientific documents, project results, statistical data, spatial data, photographs, and press reports. The information system consists of several tools:

First, the visualisation tool "*GIS ICZM-Oder*" (see 'www.ikzm-oder.de'). The web-based GIS approach invalidates the criticism that GIS is an elitist technology. The GIS ICZM-Oder allows free access to regional spatial information. This feature is unique, in that, for the first time, multi-disciplinary spatial data are presented across borders and across land and sea to a large community in Germany. The GIS ICZM-Oder is linked to the GIS ICZM M-V, which contains data about the coastline of the federal state Mecklenburg-Western Pomerania.

Second, the "*Meta Information System ODIS*" (see 'http://odis.ikzm-oder.de') that was developed to facilitate information searches. ODIS has a gateway to the 'Coastal Information System of North- and Baltic Sea' ('*Nord- und Ostsee-Küsteninformationssystem*', NOKIS) and thus ensures the mutual exchange of data and information.

Third, the E-learning Platform "*ICZM-D Lernen*" (see 'www.ikzm-d.de'), which is a free accessible web-based learning system consisting of online study, information and teaching modules. In particular, the modules provide information on specific focus themes on coasts and seas as well as ICZM. Furthermore, there is a module about the Oder estuary region as well as thematic modules including a focus on the project 'ICZM-Oder estuary' as case study.

Fourth, "*Coastal Databases*" (see 'http://databases.eucc-d.de') were developed to promote the information flow in the Oder estuary region. Additionally, they enable linkage between different regional, national and international user communities. The main objective is to provide permanent access to the latest and most comprehensive data and information for everybody, at any time and everywhere. They contain world-wide coastal and marine information about projects and regional case studies, events, conferences and workshops, education and training programs, summer schools and courses as well as coastal pictures.

6.1.5 Evaluation

Basis for evaluation is a compilation of data, which should be collected in the frame of a monitoring process. It constantly gathers information which is consequently evaluated and may lead to the notion that an ICZM initiative has to be changed. According to de Boer et al. (2003) a good coastal monitoring system covers the whole area of interest and during a prolonged period of time. The type of data being monitored can be:

- social, e.g. birth rate, health, quality of life,
- economical, e.g. income, number of industrial companies, transport volume between two regions,
- ecological, e.g. number of a single plant, health of a population, and
- physical, e.g. position of coastline, depth of a channel, size of the dunes.

Concerning the evaluation, the data gathered is used to analyse to what extent the actions of ICZM activities solve problems that were identified by its objectives. Therefore, the evaluation framework developed for this study at hand (see Table 2) can be used for an ICZM project evaluation since it constitutes an own tailor-made framework for European ICZM projects. It is recommended to entitle a person being responsible for continuous and regular quality management of a regional ICZM process. Furthermore, periodic (every three years) external evaluations are viewed as an adequate approach (see Table 9).

6.2 Guidelines for the federal state level

It is suggested that the main responsibility of the federal state level is to coordinate top-down and bottom-up approaches. On the one hand that means supranational and national information should be carried into the regions, and on the other hand, regional best-practices experiences should be transferred to the national and supranational level. It should be the task of the federal state level to organise, communicate, and structure these activities. An adequate measure seems to be the establishment of ICZM Coordination Points, partly modelled on the Belgium Coordination Point (see Chapter 4.1.1).

6.2.1 Establishment of ICZM Coordination Points

An ICZM Coordination Point provides the opportunity to organise and structure the process of coastal management at Germany's coast. Since the BMU (2006) proposed a formation of an "*ICZM secretariat*", the establishment of a central coordination point to guide and support ICZM is not a new issue in Germany. But the idea still has to be concretised, and especially its organisation and tasks have to be clarified.

In reference to the **organisation** of the Coordination Point, it is recommended to establish three ICZM Coordination Points at Germany's coast, one in each coastal federal state: Lower-Saxony, Mecklenburg-Western Pomerania, and Schleswig-Holstein. The reason for settling the Coordination Points at federal state level can be paraphrased by the term 'as few as possible but as many as necessary'. That means, on the one hand the decision meets the demand of BMU (2006) to build up as few structures as possible. And on the other hand, it is tried to build Coordination Points that have an intense connection to the regional level, which is regarded as the most important level for ICZM (see Chapter 5.3.1). Since structural differences and competitiveness between federal states might function as barriers (Janßen, 2007), it can be concluded that the federal state level comprises the lowest common denominator in order to coordinate ICZM.

Thereby it is important that each Coordination Point is located within an existing institution/organisation in order to avoid a build-up of new bureaucratic structures, but make use of existing structures. According to the good experiences in Belgium (see Chapter 4.1.1), it is suggested to establish the Coordination Points within independent coastal institutes. That means the Coordination Points should neither be run by a purely environmental, nor economic institution. Therewith it can be assured that all relevant stakeholders and disciplines are regarded equally. Possible organisations are for instance EUCC in Mecklenburg-Western Pomerania, the GKSS Research Centre Geesthacht in Schleswig-Holstein, and the Alfred

Wegener Institute for Polar and Marine Research (‘*Alfred-Wegener-Institut für Polar- und Meeresforschung*’) in Lower Saxony.

Even though the BMU (2006) proposed to base a pure information and coordination secretariat, there are increased calls for a council with authorisation (Bruns and Froh, 2007; Wenk, 2007). Taking these claims into consideration, it is recommended to base the Coordination Points on a clarified legal situation. They should consist of an official character, be long-term reliable and provide a definite structure. For these reasons, the respective independent institute has to cooperate closely with the ICZM relevant administrations at the regional, federal state and national level. In reference to this condition, the independent institute should function as a central communication and information platform for ICZM-relevant decision-makers, scientists, and practitioners. The scheme below, displays the structural organisation of an exemplary Coordination Point for Germany (see Figure 20).

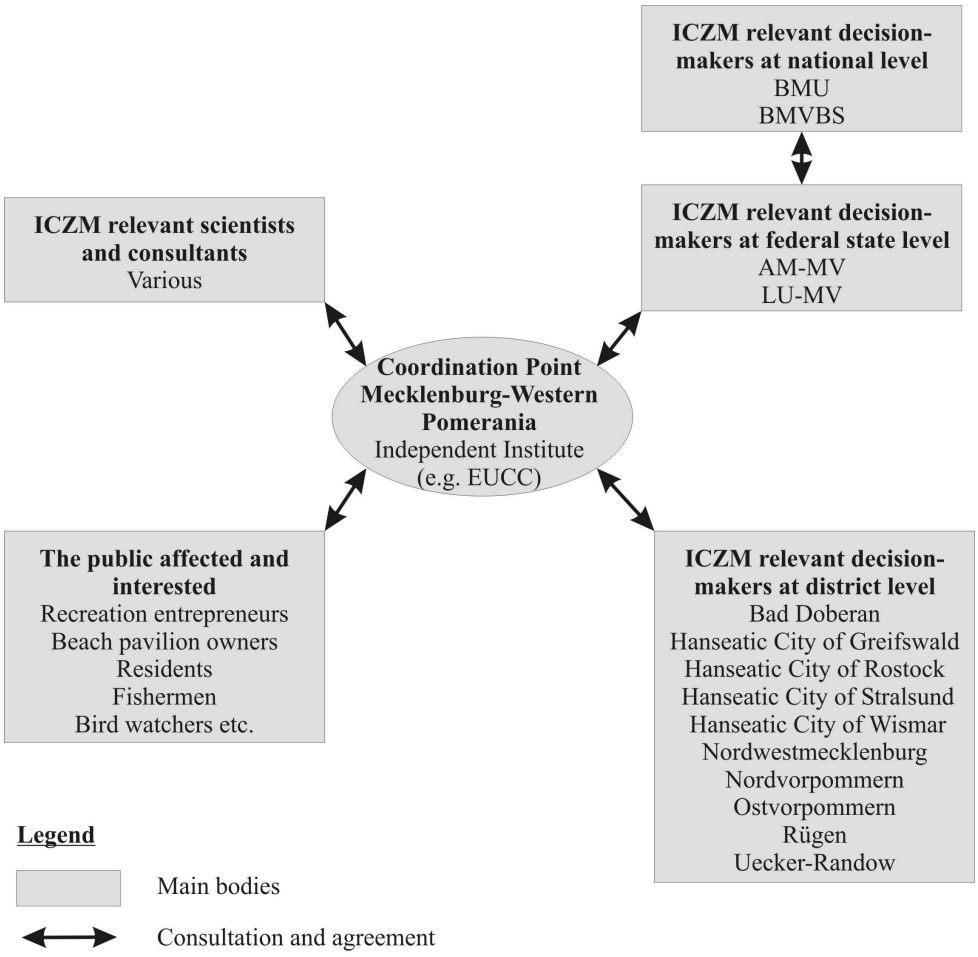

Figure 20: Structural organisation of a Coordination Point for Germany (here exemplary for the federal state of Mecklenburg-Western Pomerania), at which LU-MV stands for Ministry of Agriculture, Environment and Consumer Protection (‘*Ministerium für Landwirtschaft, Umwelt und Verbraucherschutz Mecklenburg-Vorpommern*’)

In that context, several aspects play an important role. First, there should be a strong connection between the Coordination Point and the coastal regions since they can be regarded as the most important level for ICZM (see Chapter 5.3.1). Therefore, it is advisable to nominate a contact person for maritime affairs in every coastal district (see Chapter 4.1.1). These persons ought to stand in intensive contact to the Coordination Point. Furthermore, regular meetings should take place to discuss recent and future developments. It is advisable to inform the affected and interested public regularly. In turn, it is viewed as important that it is possible for the public to contact a competent person from the Coordination Point (see Chapter 5.3.2). It should build a capable contact point, open for all coastal practitioners.

Second, there should be a strong connection and collaboration with the ICZM relevant decision-makers from the federal state level. They are in close contact with the national decision-makers and together able to structure, steer, and coordinate the nationwide ICZM process. The ICZM relevant decision-makers from various sectors are to come together in the frame of regular meetings organised by the Coordination Point.

Third, it is important to involve ICZM relevant scientists and consultants, e.g. from the sectors of coastal protection, economics, industry, marine environment, nature conservation, sociology, spatial planning, tourism, and transport. According to the case study of Belgium (see Chapter 4.1) it is suggested to invite these experts in order to build temporary working groups if a subject that concerns them is discussed.

Fourth, it is recommended to establish efficient communication and experience-transfer between the three Coordination Points of each coastal federal state. It is also possible that they together arrange a meeting with federal state and (inter-) national decision-makers. Following the Belgium example, such a meeting should take place every three month, preferable at changing locations at the coast in order to visit various regional/local best-practice projects.

In reference to the **tasks** of the Coordination Point, it has to be clarified that it offers a platform for policy consultation and integration but does not act in the place of the competent government. According to the opinion of 30 ICZM experts, the aspects of cooperation and information transfer are regarded as the most important steps towards German ICZM (Bruns and Froh, 2007). Taken this into consideration, the main task of every Coordination Point is to enhance communication, cooperation, and information-transfer between various sectors (e.g. coastal protection, economics, marine environment, spatial planning etc.) and levels (European, national, federal state and regional level).

Since this aspect is also the main requirement of the Belgium Coordination Point, some of the overall tasks can be taken over or modified for the German conditions (see Chapter 4.1.1):

1. Communication and awareness raising
   - Awareness raising through concrete actions as part of ICZM
   - Own publications (newsletter, brochures, leaflets, posters, articles, website) about coastal activities
   - Organise and participate public days, seminars, workshops, and conferences
   - Link all ICZM relevant data and information in interdisciplinary, inter-sectoral regional and national databases or web-based information systems
2. Contact Point
   - Run an information office and to provide objective information and advice to policy-makers, practitioners, scientists, teachers, students, interested citizens, etc. - nationally and internationally
   - Development of a handbook or guidelines of ‘good ICZM’ for regional/local practitioners
   - Initial support to create regional ICZM umbrellas under which ICZM activities can be realised
   - Providing information from and to the international community
   - Participating to relevant national and international ICZM projects and networks
3. Consolidation of decision-makers
   - Initiating regular and problem-oriented meetings with relevant ICZM decision-makers, scientists and the public affected
   - Organising steering and working groups to work on new policy developments
   - Support the political follow-up and decision-making
   - Acting as secretariat of working groups and consultants

6.3 Guidelines for the national level

At national level, the responsibility for ICZM lies mainly with the BMU and the BMVBS mainly (Schernewski, 2006). Consequently, this part of the guidelines is chiefly targeted to decision- and policy-makers from these ministries. Moreover, decision-makers, scientists, and consultants which support these ministries are addressed. It is advisable that BMU and BMVBS are primarily accountable for monitoring and evaluation of the nationwide coastal zone in order to steer and enhance the German ICZM process. The following guidelines support them in defining what tasks these ministries and supportive institutions should take charge of.

6.3.1 Definition of overall targets for the German coastal zone

As called for by ARL (2007) and Gee et al. (2006), it is recommended to create overall targets for all German coastal zones which can serve as a guiding vision for decision-makers. They should constitute objectives and rules for consensus-led and sustainable development of coastal zones by taking account of the value and potentials of the respective area. BMU and BMVBS should initialise and organise the definition of these overall targets for the German coastal zones. In doing so, it is important that the ministries work closely together with the regions in order to arrive at region-specific principles, targets, and valid overall concepts for ICZM.

In the process of target-definition, it is advisable to distinguish between coastal zones of North and Baltic Sea. The reason for that can be seen in de different preconditions at the two seas. The North Sea coast and its hinterland are endangered by floods and storms, where then coastal defence plays the major role. Taking this precondition into account, it seems suitable to adapt the Dutch ‘priority approach’ (see Chapter 4.2.1) for the German North Sea coast. That means, all issues of coastal defence should have priority at the North Sea coast. All other sectoral interests should be subordinated. Consequently, it is not the target to establish real ‘integrative’ CZM at the North Sea coast but flood safety measures with as much ICZM aspects as possible. The situation at the Baltic Sea coast is different. Coastal defence does not play the major role since the rise of the MSL during a storm surge is lower at the Baltic Sea (160cm compared to 500cm at the North Sea (Schmitz, 2007)). These different preconditions are also reflected by the findings of the questioning by Bray et al (2007). Therein, coastal erosion and a possible sea level rise at the North Sea coast are regarded as more important than at the Baltic Sea coast. Consequently, it should be the target for the Baltic Sea coast to implement a real ‘integrative’ CZM. That means an equivalent treatment of all sectors affected.

6.3.2 Establishment of Indicators

In order to operationalise the overall targets for the German coast, it is necessary to develop a manageable set of indicators. Thereby the requirements of the European Working Group on Indicators and Data (WG-ID) should be taken into consideration (see WG-ID, 2006). They proposed two sets of indicators. First, an indicator set to measure the progress of implementation of ICZM ("*progress indicators*"), and second, a set of indicators to measure the sustainable development of the coastal zone ("*sustainability indicators*").

There is a discourse concerning indicators in Germany (see Dehne et al., 2007; Hoffmann, 2007; Schernewski et al., 2006). All have in common that a set of German 'sustainability indicators' should provide a stable basis for coastal communication and assessment. By means of the Belgium experiences (see Chapter 4.1.1) it can be suggested to develop a simple set of indicators for Germany. In the first instance, it has to be simple in terms of understanding as a basis for public discussion, and in second instance, it has be simple in terms of receiving all data needed for the indicators. Furthermore, the set should consist of economic, environmental, and social components. Hence, six priorities (bold) and 21 indicators of the Belgium Coastal Barometer could serve as an information pool for German indicators:

1. Preservation and strengthening of the socio-cultural capital: differences in salary; protection and stocktaking of real estate.
2. Realisation of administrative innovation: implementation of ICZM.
3. Quality improvement of the residential and social environment: surface area of protected area; ageing rate; residential comfort; utilisation of public transport in day tourism to the coast; surface area of dedicated coastal habitat; number of motor vehicles on the roads.
4. Support for tourism and recreation: share of public transport in day tourism to the coast; share of highly accessible accommodation units; amount of tourists that stay-over.
5. Improvement of the environment and nature: surface area of protected areas; surface area of dedicated coastal habitat; quality of beach water; residual waste; number of motor vehicles on the roads; number of observed pollution incidents (oil etc.)/flight hour; fish stocks that are not being over fished.
6. Reinforcement of the economic fabric: economic value of ports; salary pressure; ratio of company start-ups to bankruptcies; added value per employee; employment in tourism; change in employment in fisheries and agricultural sectors; fish stocks that are not being over fished; unemployment rate.

It is recommended that these indicators and their background data are made available to the wide public. The use of a website seems to provide the most effective approach. Thereby it is important to focus on a simple and user-friendly presentation and description. A model for a future German website could build the indicator system of the Flanders Marine Institute (see Chapter 4.1.1). It is advisable to use an existing coastal information platform for such a new internet presence.

According to 'progress indicators', Pickaver et al. (2004) developed a set of indicators to measure the progress in ICZM which is suitable for the German conditions. They defined four ordered and continuous phases, broken down into 31 actions, from a situation with no ICZM to one where technique is being fully implemented. The methodology has been accepted at EU level (Lucius and Pickaver, 2006).

6.3.3 ICZM as engine for paradigm shift of spatial planning

National spatial planning in Germany raises the claim of integration and balance of various sectors that leads to the condition that ICZM is a classical task for spatial planning (Wenk, 2005). Basically, it is intended to implement ICZM in existing legislations and structures, whereby the German Spatial Planning Act ('*Bundesraumordnungsgesetz*') plays an exposed role at national level (Schernewski, 2006). Until the 1990s, spatial planning in Germany was organised highly administrative, formal, and hierarchical. Precautionary tasks were addressed by long-term plans and solutions of conflicts were handled by reactive permissions (Fahrenkrug et al., 2001). Ever since, it was recognised that this old fashioned spatial planning approach is not able to steer actively dynamic and regional-specific new developments (ibid.). With the revision of the Federal Spatial Planning Act in 1997, it was intended to pursue a policy consisting of more informal, cooperative, participatory, and execution-oriented approach.

Since this development is slow-moving, ICZM provides the opportunity to be an exemplary model for such a desired approach. ICZM could function as an engine for paradigm shift of spatial planning. Therefore, two principles, which could have been derived from the analyses of this study, seem to play a central role.

The first principle is called decentralisation and attributes to the case study of the Netherlands (see Chapter 4.2). It means that responsibilities and tasks of ICZM are given to the federal state and regional/local level as much as possible. The findings of the questioning by Bray et al (2007) support this statement. Therein, the second common answer given on the question how to enhance the effectiveness of regional administrations was the statement of giving competencies to regional administrations. The basic principle of decentralisation addresses the need for improved regionalisation and localisation of policy-making and management. It is advisable that the German BMU and BMVBS provide overall guidance of the ICZM approach,

but desist from more control, so that other regional and federal state government will be able to take more responsibility and perform better. They should have more scope to work with other authorities, organisations, local residents and businesses to devise effective solutions, exploit opportunities, and adopt an approach tailored to regional/local circumstances. Consequently, different German regions ought to be defined which are highly different and therefore need different development goals, policies, and management approaches. A possible division of the German coastal zone could be: North Sea, Baltic Sea and the estuaries of River Ems, Weser, Elbe and Oder. Since the WFD calls for integrative management plans and participation approach, ICZM could be linked to the WFD and deal with the coastal zone of these estuaries.

The second principle attributes to the case study of the UK and allows for an early involvement of stakeholders (see Chapter 4.3.1). For ICZM and spatial planning activities in Germany it is considered as essential to involve relevant stakeholders into the decision-making process right from the beginning. It is recommended to conduct a stakeholder analysis that divides stakeholders in four different groups with different roles and responsibilities: Client Steering Group (representatives of organisations and authorities), Elected Members (politicians from local, regional, and national authorities), Key Stakeholders (representatives of primary interest), and Other Stakeholders (individuals and organisations affected). BMU and BMVBS should support innovative stakeholder involvement by financial support of best-practice projects. A good and practical example of an early and responsible stakeholder involvement approach is mentioned above (see Box 2).

7. Discussion

In the preceding chapters, the study at hand presented various possibilities to bridge the most significant gaps of the German ICZM process. However, there are some issues that need to be discussed. The results have to be critically analysed, compared, and discussed in relation to the originally stated problem and methods. Furthermore, the results are contributing new knowledge, which has to be compared with previous scientific studies. Consequently, this chapter is structured into three sections. The first discusses the implications of methods adopted in this study, the second discusses the results of the study, while the third compares these results with other existing scientific studies.

7.1 Discussion of methods

The methodology of the present study is composed of four different research approaches, namely deficit approach, top-down approach, bottom-up approach, and development of guidelines. Each approach is composed of various research methods of sampling, data collection, and data analysis (see Chapter 2). In the following, strengths and weaknesses of each research approach are discussed.

7.1.1 Deficit approach

The relevance of the gap analysis was of outstanding significance for the whole study since all further research approaches (top-down approach, bottom-up approach, and development of guidelines) are based on its results. Consequently, a risk of taking along certain errors developed in the gap analysis did exist. These potential errors can grow during the conduction of further research. And in turn, if some gaps of the German ICZM process were not recognised in the gap analysis, it is likely that no answers could be found since these gaps wouldn't have expanded into following research methods. In order to overcome these risks and to arrive at reliable and valid results, ten central German ICZM experts were interviewed concerning their opinion on the gaps of the German ICZM process. In addition, after conducting the analysis, the findings were peer-reviewed by six ICZM experts. Therewith, the existence of errors could be minimised and it can be assured with the utmost probability that the results of the gap analysis are valid and in step with the actual practice. The findings built a well-grounded basis for the later research. They were a help to keep focussed on the main problems, and not to digress on marginal issues.

The interviewed ICZM experts were chosen by theory based sampling (see Chapter 2.1.1) which lead to a risk of being biased. To overcome this risk it was tried to interview experts from different horizontal and vertical levels. Since some of the experts were not available or willing to participate, the resonance from the national administrative level and the geographic area of Lower Saxony falls short.

The results of the interviews hold eight groupings of gaps (see Figure 6), whereof only the two most nominated gaps were taken into consideration in the further course of the study. It became necessary because of time matters. Consequently, the other six gaps, which were less nominated, were not extensively considered. However, it was tried to incorporate some of these six gaps which are closely connected with the two main gaps (see Table 7).

7.1.2 Top-down approach

It was not possible to read all national ICZM strategies of the EU member states since some of them are published in their native language only. On account of this, some potential good quality strategies could not be taken into consideration, such as the Finnish strategy.

By studying the national ICZM strategies of Belgium, The Netherlands and the United Kingdom, it showed up that they display mainly positive experiences. Hence, there was not much to learn from their pitfalls. In general, the strategies are written very broad and do not contain much detailed information of the regional and local level. The limitation became apparent that these strategies alone could not provide high-quality lessons for Germany. To tackle this issue, a variety of 13 ICZM related documents of the three countries were studied.

The central method used for the top-down approach was an examination in terms of lessons learned. Even though Rose (1991) identified five ways of lesson drawing (see Chapter 2.2.3), the term lesson learned remained fuzzy and therewith left a lot of leeway for subjective interpretation. There wasn’t a procedural method to be found that arises from the term lessons learned. On account of this, the derivation of lessons learned are only to a limited extend systematic and transparent.

7.1.3 Bottom-up approach

The methodical basis of the bottom-up approach builds the evaluation framework for European ICZM projects, which was developed by the author of this study (see Table 2). Since it could not be scientifically tested and established beforehand, it holds the risk of being no adequate approach to assess ICZM projects. The author tried to minimize this risk by building the evaluation framework on a stable scientific basis. The framework was developed in dependence on a Coastal Management Cycle (GESAMP, 1996; Olsen et al., 1998) and has been adapted to the European conditions according to the findings of Pickaver et al. (2004) and SPICOSA

(2007). Despite this limitation, the evaluation framework constitutes a systematic and transparent basis for project evaluation. Moreover, it builds a quantitative aspect in (semi-) qualitative analysis. Bryman (1992) supports the mix of quantitative and qualitative analysis because "*quantitative research is especially efficient at getting to 'structural' features, while qualitative studies are usually stronger in terms of 'processual' aspects*." By using the evaluation framework, these two strengths could be brought together.

It should be noted that the traffic light procedure faces a restriction. A comparison of the three ICZM projects is only possible to a limited extent, since their nature is highly different. 'ICZM-Oder estuary' is a research project which aims at delivering scientific output, but not in executing practical ICZM measures, 'ICZM-Bay of Lübeck' is a single measure of coastal protection using ICZM aspects, whereas 'ICZM-Western Zeelandic-Flanders' is a regional-wide approach oriented on executing ICZM measures. Consequently, the traffic light procedure does not allow a comparison of step one (problem definition) of the various projects, but it allows to derive good and bad experiences. Therewith, it meets its obligation being an approach aiming at drawing conclusions in order to enhance the German ICZM process (see Chapter 2.3.3).

7.1.4 Development of guidelines

The scientific tool to develop guidelines is called abstracting. For the present study that means specific information on ICZM gaps, ICZM strategies, and ICZM projects were taken into consideration and higher order concepts, so called guidelines, were developed. This approach bears two risks.

First, it bears the risk of being not transparent since it gives a lot of leeway to the author. He could decide subjectively, and not by systematic values, which information flew into guidelines and which did not. Hence, the development of guidelines holds the uncertainty of being traceable. In order to counter this uncertainty, it was tried to design the abstraction of guidelines as transparent as possible. Therefore, the definition of ICZM was concretised towards the German conditions in order to derive a set of objectives/targets. All developed guidelines aim at reaching these targets. A further measure to enhance the transparency was the association of each guideline to one or more gaps of the German ICZM process and to certain national or regional/local case studies conducted (see Table 7). Therewith, it could be clarified, what the aim of each guidelines is, and where the data for the guideline is coming from.

Secondly, it bears the risk of being too general so that guidelines might not provide precise and applicable solutions to the reader. In order to be as precise as possible, several measures were undertaken. The guidelines were targeted at decision-makers and practitioners at various levels, namely regional/local level, federal state level, and national level. Furthermore, it was tried to provide an instruction manual to initiate ICZM for the regional/local and federal state level.

Where reasonable, the guidelines have been illustrated by means of practical examples in boxes. Next to data from the case studies and interviews conducted, additional data has been consulted in order to arrive at tailor-made guidelines. The guidelines for the national level in turn, lack this high grade of accuracy. They should rather be regarded as recommendations, that means a direction in which ICZM should move, but not as a precise instruction manual.

It can be assessed as strength of the guidelines, that they were peer-reviewed by two experts of the German ICZM process. Therewith, the risks mentioned could be minimised and it can be assumed that the guidelines are valid, reliable, and in step with the actual practice. However, it should be noted that they do not constitute a blueprint.

7.2 Discussion of results

The guidelines are regarded as the main results of the study since they consolidate all results of the preceding analysis of the deficit-, top-down, and bottom-up approach. Below, it is discussed to which extent these guidelines allow to bridge the main gaps of the German ICZM process (see Chapter 3.1). Hence, strengths, weaknesses, uncertainties, and limitations of the results are discussed according to the main gaps, namely formal implementation as well as best-practice experience and knowledge transfer.

7.2.1 Formal implementation of ICZM (Gap 1)

Following, it is discussed in how far a soft implementation of ICZM is suitable and in how far the issue of responsibilities and tasks of the German ICZM process could be clarified.

The present study acted in accordance to the demand of the BMU (2006) to formally implement the principles of ICZM in a ‘soft’ way, hence by **soft implementation**. That means to integrate ICZM into the existing legal system without being an independent planning and decision-making tool. The most outstanding suggestion in that context is the establishment of ICZM Coordination Points. They should offer a platform for policy consultation and integration, but do not act in the place of the competent government. It is intended that ICZM relevant decision-makers from various sectors come together at regular meetings and deliver relevant ICZM issues to their field of activity, where binding laws, directives or regulations emerge. Another example refers to the regional project level, where the maxim of formal implementation is to identify existing structures (such as networks) and integrate ICZM. In this regard the case study ‘ICZM-Oder estuary’ did make good experiences with integrating ICZM aspects into the Regional Agenda 21 process, which as a result is recommended for other German regions. These examples show that soft implementation functions.

But the BMU (2006) also demands for formal implementation without building up new structures, such as administrations or working volumes. The study at hand draws the conclusion, that this requirement cannot be satisfied. One reason is provided by the case study in Western Zeelandic-Flanders. There, an outstanding contribution to the success of the ICZM process was the establishment of a contact point for practitioners, namely the project office of 'Naturally Vital', which is manned with a full time position. It is doubtable that the work volume of the new office could be integrated into old structures. At least the quality of the regional ICZM would suffer from the loss of the office and job. In dependence on interview statements of German ICZM experts, it is questionable to which extent all ICZM principles can be implemented in a soft and informal way. Fichtner (2008) assumes that the "*targets of ICZM are too far reaching for a soft implementation*". Hence, ICZM in Germany seems to be understood as a panacea for all problems at the coast which can be formally implemented in the legal system and existing structures without additional costs and efforts. The results of the study disprove this illusion. It seems to be possible to formally implement ICZM in the existing legal systems, but it becomes necessary to build up at least a minimum of new structures, which would lead to additional costs.

The second outstanding issue of formal implementation is the question of **responsibilities and tasks**. In order to arrive at tailor-made responsibilities and tasks, it was necessary to specify the definition of ICZM for Germany and derive explicit targets (see Chapter 1). Thereupon, responsibilities and tasks of ICZM in Germany could be allocated to national, federal state and regional level. In the following, it is discussed to what extent these responsibilities and tasks are adequately clarified for the various administrative levels.

At regional level, the main task of ICZM is the build-up of an umbrella for various practical coastal measures. It is recommended to initialise new and enhance running ICZM activities by adopting a five-step scheme (see Figure 18).It can be regarded as the main uncertainty that ICZM activities have to start out of the region primarily. That means the initiative for recognising a problem and seeing ICZM as an approach to tackle this problem has to arise from the region itself. To date, these regional impulses are weak. For this reason, it is a central issue to raise regional awareness of ICZM. The study at hand can not provide a detailed instruction of how to raise regional awareness. But the results of the study show that the execution of precise measures is experienced as the main tool to raise regional awareness of all stakeholders (see Chapter 5.3.2). Furthermore, they present benefits of ICZM. One future development desired is decentralisation (see Chapter 4.2.1), that means to give more authority and leeway to the regions and municipalities in order to allocate their working power and money. But it is debateable to which extent such a development is willed and possible in Germany since most of the municipalities are used to work top-down. Wenk (2007) supports this assumption by saying that most municipal institutions only undertake action if they got order from above, which refers to a

legal regulation from national or federal state level, but not on voluntary basis. The study could not answer the question of how to enhance decentralisation since it is beyond the scope of the study.

At federal state level, the main task defined is the coordination of top-down and bottom-up activities. Therefore, it is recommended to establish three ICZM Coordination Points. Organisation and tasks are mentioned and described, but details are not elaborated enough to establish these Coordination Points from scratch. Particularly, it could not be clarified by whom and to which amount the responsible institute is financed. This is becoming necessary since new working volume has to build up. Furthermore, it is mentioned that the Coordination Point should be based on a clarified legal situation: it should consist of an official character, it should be long-term reliable, and it should provide a definite structure. In the frame of the study it was not possible to suggest well-grounded solutions to this issue since the results of the study do not provide answer to this claim.

At national level, it is recommended that the responsible ministries (BMU, BMVBS) are accountable for monitoring and evaluation of the nationwide coastal zone in order to steer and enhance the German ICZM process. Therefore, three main activities were regarded as important, which are the definition of overall targets, the establishment of indicators, and the organisation of ICZM as engine for a paradigm shift of spatial planning. Since these activities refer to the national level, they had to be formulated more abstract and general than the preceding guidelines. That is especially true for the third guideline which therewith constitutes rather a recommendation than a guideline. It was not intended to deepen this aspect since it would go far beyond the scope of the study to evaluate the German spatial planning process. Nevertheless, this aspect was considered as important since ICZM and spatial planning are closely interwoven at the national level.

7.2.2 Best-practice experience and knowledge transfer (Gap 2)

Following, it is discussed to what extent the results of the study are a suitable contribution for best-practice experience and knowledge transfer in Germany.

The main results of the present study concerning **best-practice experience** enter the conceptual five-step scheme (see Figure 18). It constitutes applicable instructions, which allow systematically execution of regional ICZM. The scheme holds a potential that practitioners at regional and local level are able to organise and execute ICZM in their respective region. Therewith, the results of the study tackle the weakness of absence of elaborated instructions or guidelines for practitioners at regional and local level (Schernewski, 2008). Consequently, the scheme constitutes a stepwise instruction to gain best-practice experiences. But it simplifies reality since its scientific aspiration is to capture the essence and to remove the redundant

aspects of the system under study. As a result, some limitations of the scheme emerge. Under real-world conditions, various ICZM activities can not be separated from each other as sharp as illustrated by the five-step scheme. In reality their transitions are rather smooth. The operation of an ICZM initiative is usually not realized step-by-step as shown in the conceptual scheme. The case studies examined hold the result that several steps can start at the same time, can overlap, or can be executed parallel to each other. Thus, the sharp division of the scheme should not be taken for granted. Moreover, the scheme builds a standard which allows region-specific deviation and modification.

Since the execution of best-practice projects is carried out at the regional and local level mainly, it is central to discuss how stakeholders can be stimulated to undertake best-practice activities. First, it is essential that benefits of ICZM get across to regional/local stakeholders. As the results of the present study have shown, the main tool to raise awareness for these benefits is the practical execution of measures (see Chapter 5.3.2). If people notice that particular measures are realised along their coast, the acceptance for ICZM can be enhanced. Secondly, regional ICZM processes face the shortcoming that practitioners do not know how to set ICZM activities into practice (Liebrenz, 2007). These two aspects constitute a dilemma of German ICZM. On the one hand, it is necessary to execute ICZM measures in order to show concrete benefits of ICZM, and on the other hand regional/local practitioners do not know how to execute these ICZM measures. To overcome this dilemma, a possible strategy for the future could be to execute few outstanding and eye catching measures in regions where ICZM is already present (e.g. Oder estuary). Such show cases of over-regional importance are experienced as politically and socially highly efficient (see Chapter 5.3.2). They hold the potential to keep a positive ICZM experience in people's mind and therewith promote ICZM.

In reference to the aspect of **knowledge transfer**, it should be noted that it is understood as the transfer of ICZM knowledge, whereas the flow of knowledge moves in two directions. First, regional/local best-practice experiences should be gathered, analysed, and connected with each other at a central point (bottom-up flow). Second, knowledge from the (supra-) national and federal state level should be delivered to the German regions (top-down flow).

The main result of the study concerning knowledge transfer is the suggestion of establishing three ICZM Coordination Points (see Chapter 6.2.1). Even though organisation and tasks of the Coordination Points could be defined, the question of how this information and data is coordinated technically stays open. It seems necessary to establish a valid and reliable information platform including tools in order to transfer ICZM related knowledge from top to down and vice versa. It should contribute transparency and therewith build a basis for a broad consensus directed discussion. The regional information system of 'ICZM-Oder estuary' holds a potential technically answer (see Box 4). It seems feasible to transfer its visualisation tool 'GIS

ICZM-Oder' and its Meta Information System 'ODIS' to the federal state and/or national level. Thereby it is essential that the Coordination Point is responsible for its technical realisation and maintenance, whereas ICZM related administrations, coastal associations and societies as well as the public are enabled to use it as a free and user-friendly platform for knowledge transfer.

7.3 Comparison with literature

Following, the results of the present study are compared with previous scientific studies dealing with guiding ICZM.

Various international guidelines for integrated coastal management do exist. The most frequently quoted are 'The Contributions of Science to Integrated Coastal Management' (GESAMP, 1996), 'Conceptual Framework and Planning Guidelines for Integrated Coastal Area and River Basin Management' (UNEP, 1999), 'Methodological Guide to Integrated Coastal Zone Management' (UNESCO, 1997), and 'Guidelines for Integrated Coastal Zone Management' (Post and Lundin, 1996). All of these studies suggest (as the study at hand) dividing the ICZM process into various steps. Post and Lundin (1996) for instance recommend to consider six steps for the development of an ICZM programs, which are (1) Triggering the Need for ICZM, (2) Who Gives the Go-Ahead?, (3) Who Does What? Roles and Responsibilities in the Coastal Zone, (4) Formulation of the Plan, (5) Program Implementation, and (6) ICZM and National Development Plans, Funding Considerations and International Aspects. GESAMP (1996) concretises these descriptions towards the execution of coastal management. Next to the proposal of five management steps, namely (1) Issue Identification and Assessment, (2) Programme Preparation, (3) Formal Adoption and Funding, (4) Implementation, and (5) Evaluation, relevant techniques in science and management such as Impact Evaluation, Modelling, or Economic Assessment are presented. The main difference between these guidelines and the guidelines of the study at hand can be seen in their grade of accuracy. The studies mentioned above aim at global validity. Due to that they are written very abstract and general. In contrast, the present study corresponds to the German conditions and concretises the steps of ICZM towards German state of affairs by providing a five-step scheme (see Figure 18). Moreover, the international guidelines act on the assumption that there are no coastal management policies in place. Consequently they all aim at a build-up of new regulations and structures, thus hart implementation. The guidelines of the present study, in contrast, are directed at the German demand to integrate aspects of ICZM into existing regulations and structures, whereby they allow for soft implementation.

Structural guidelines for ICZM at the national level of Germany do not exist. Nevertheless, there are some documents which give recommendations for the German ICZM process. In this regard, the German national ICZM strategy by BMU (2006) plays a major role. It particularly

contains an elaborated stocktaking of legal conditions, operating coastal stakeholders, current coastal state-of-the-art, and a strategic part implying future steps of ICZM. Referring to the latter, few aspects are mentioned which emerge as well in the study at hand, namely "*further optimization of the set of legal instruments according to the basic ICZM principles, creation of the basis for continuation of the dialogue process, best-practice projects and their evaluation"*, as well as *"development and application of ICZM indicators*" (ibid.). But the German ICZM strategy part holds only few programmatic and implementation-oriented propositions. The present study considers practical suggestions for formal implementation and execution of measures as an outstanding target of the investigation. Consequently, the present guidelines hold more precise and realisable instructions for practitioners at regional/local and federal state level.

Bruns and Froh (2007) conducted a questioning among 30 German ICZM experts, asking for state-of-the-art and perspectives of ICZM in Germany. Their results are in one line with the results of the study at hand. A notable issue in that context is their result of increased calls for an ICZM council which should coordinate and communicate the German ICZM process and is moreover featured with a certain amount of authorisation. Furthermore, the study regarded four matters as the most important steps for the future development of ICZM in Germany, namely integration of ICZM in planning processes, establishment of ICZM councils, execution of beacon projects, and raising ICZM's degree of awareness. These aspects can also be found in the guidelines of the present study. Therewith the results of the study accompany the results of Bruns and Froh (2007).

The research project of Gee et al. (2006) has analysed interactions of spatial planning and ICZM in Germany. Several recommendations were given such as integration of ICZM issues into existing structures, thematic and operational priorisation, consensual vision and overall concept for the coast and sea, communication and flow of information, and coordination of ICZM activities through a nationwide coordination point (ibid.). These findings go along with the content of the guidelines developed in the present study.

Various research projects and scientists at regional level are employed with the issues of formal implementation. Welp (2000) conducted a comparative study of ICM projects at the regional level in Estonia, Finland and Germany and examined possibilities for formal implementation of ICZM in Biosphere Reserves. Erbguth et al. (2007) approve an integration of ICZM aspects into the European WFD, Schernewski (2004) examined the potential of Regional Agenda 21 processes for ICZM, and Wenk (2005) gives recommendations to integrate ICZM into spatial planning practice. On the one hand, the results of the study at hand come along with the recommendations of these experts since both suggest integrating the principles of ICZM into existing structures (such as Regional Agenda 21 networks). On the other hand, the results of the

present study differ from the other studies because it is regarded as necessary to build up at least a minimum of new structures and working volume, for instance in reference to the proposed Coordination Points.

Numerous studies and plenty of literature on best-practice experience and local ICZM projects in Germany do exist (see Autsch and Toben, 2007; Dickow and Liebrenz, 2007; Kannen and Licht-Eggert, 2007; Schernewski et al., 2007; Sewig, 2007). These studies partly contain recommendations, but they do not provide systematic instructions for the practical execution of regional/local ICZM activities. Glaeser and Sekścińska (2007) have written a report with the title 'Recommendations and Flow Chart for ICZM in the Odra Mouth Region: preliminary results' in order to guide practical execution of ICZM measures in the Oder estuary region. It is closely based on the ICZM scheme of 'CoastLearn'[7] (see de Boer et al., 2003) and does not provide suitable tailor-made instructions or guidelines for German conditions (probably because it constitutes a preliminary result). The study at hand contributes to this shortcoming by providing systematic and detailed guidelines for regional practitioners to execute ICZM (see Chapter 6.1). Thereby, the instructions seem to be suitable for all coastal regions in Germany.

[7] 'CoastLearn' is a multimedia distance training package on ICZM, initiated by EUCC – The Coastal Union. Their ICZM scheme describes the cycle of an ICZM initiative by means of four phases: problem recognition, planning, implementation, as well as monitoring and evaluation.

8. Conclusions

Based on the results of the study and the foregoing discussion section, conclusions could be drawn. The study examined the German ICZM process in order to develop guidelines for formal implementation and practical execution of ICZM in Germany. It has been shown that the German ICZM process faces several gaps. It seems possible to bridge these gaps by applying guidelines that are composed of international and regional/local lessons learned. To conclude, each of the four research questions posted (see Chapter 1.7) is now provided answer.

1. *What are the main gaps of the ICZM process in Germany?*

The German ICZM process has two main gaps. The first gap corresponds to fuzziness of formal implementation, which means it is not clarified sufficiently at which administrative level the principles of ICZM should be integrated in the existing legal framework. Furthermore, responsibilities and tasks are not addressed adequately. The second gap is a lack of local and regional best-practice experience and knowledge transfer. Systematic instructions for practitioners in order to execute ICZM at regional/local level are absent.

2. *What are the lessons to be learned for the German ICZM process concerning formal implementation from the ICZM strategies of three other EU member states, namely Belgium, The Netherlands, and the United Kingdom?*

Four lessons learned for the German ICZM process can be derived from the countries examined. First, the Coordination Point of Belgium constitutes a good example how responsibilities and tasks of ICZM are divided. Second, the Belgium Coastal Barometer represents a simple set of indicators for sustainable development of the coast, whereby, it can make a contribution to the German ICZM process where "*simple*" indicators are needed. Third, the principle of early participation of the UK holds potential for Germany since it seems to be an adequate tools for formal and early involvement of stakeholders. Fourth, the priority approach of the Netherlands forms a strategic management approach for the German North Sea coast where flood safety measures have priority, whereas other coastal interests have to follow by integrating them in flood safety measures.

3. *What are the lessons to be learned for the German ICZM process concerning execution of ICZM measures from the experiences by three regional/local ICZM projects?*

From the regional and local context several aspects of ICZM execution can be learned. First, it is of high importance that there is awareness of a coastal problem among all stakeholders and that they together define the problem. Second, the support of stakeholders from administrations and the public is essential for the acceptance of ICZM and the success of the projects. Third, the

identification of precondition is assessed as the most important aspect of an ICZM project. Fourth, various sufficient possibilities exist to implement ICZM aspects into existing structures and networks, such as Regional Agenda 21, coastal defence or European research programs. Fifth, the execution of precise ICZM measures is very important since they demonstrate practical use and benefits of ICZM.

4. *Which guidelines can be formulated for the German ICZM process on basis of (1) the national ICZM strategies of the three EU member states and (2) the experiences by the three regional/local projects?*

The guidelines below provide a procedural proposal to enhance the ICZM process in Germany. Thereby, the guidelines for the regional and federal state level are presented in form of a concise and applicable instruction manual to initiate ICZM. The guidelines for the national level in contrast, lack this high grade of accuracy. They should rather be viewed as overall recommendations.

- Regional level: problem recognition, identification of preconditions, preparation of a plan/strategy, execution of measures, evaluation
- Federal state level: establishment of ICZM Coordination Points
- National level: definition of overall targets, development of indicators, bringing forward the paradigm shift of spatial planning

Overall, the study at hand provides a concretion of the German ICZM definition in order to derive operational management options. According to this, ICZM is regarded as a regional and local management process in the first instance. It is an approach which takes place at regional level, where it should form an umbrella for various local projects. In the second instance, ICZM takes place at the federal state and (supra-) national level, where all ICZM regions and activities are organised and connected with each other. Great importance is attached to aspects of communication and information-transfer.

The study provides guidelines in order to enhance the implementation and execution of ICZM in Germany at national, federal state and regional/local level. The five-step scheme forms an innovation for the German ICZM process. It constitutes an applicable instruction, which allows a systematically execution of regional ICZM. It could serve as a basis for a future ‘handbook of good ICZM’ for practitioners at the local and regional level. Moreover, the five-step scheme developed appears suitable for ICZM activities at all European countries. But it must be pointed out that it has to be concretised by the respective countries towards their nation-specific conditions and requirements.

In addition, the present study suggests the establishment of three ICZM Coordination Points. This central proposal contributes to the demand of the BMU for a nationwide organisation and coordination of ICZM. In the frame of these Coordination Points, the allocation of responsibilities and tasks were put forward. For the first time, a detailed structure and organisation of an ICZM Coordination Point for Mecklenburg-Western Pomerania has been developed. This Coordination Point holds the potential to function as an exemplary model for other German coastal federal states.

It is recommended to conduct further research on the development of tools which aim at supporting the German ICZM practice. Essentially important are two kinds of tools, at which both tend to build a reliable and valid basis for open discussions among all coastal stakeholders. First, tools which promote the nationwide ICZM information availability, such as visualisation tools and databases (e.g. GIS). Second, tools which enhance the systematic operation and transparency of integrative consensus building, such as conceptual models, scenarios, and economic valuation (e.g. sensitivity analysis).

References

Ahlhorn, F., 2008. University Oldenburg, Institute for Chemistry and Biology of the Marine Environment (ICBM), Oldenburg. Personal communication at 14.01.2008.

AM-MV, 2005. Landesraumentwicklungsprogramm Mecklenburg-Vorpommern, Schwerin, pp. 81.

ARL, IM-SH and ML-NDS 2007. Gemeinsame Erklärung von Lübeck 2007 zum Intergrierten Küstenzonen-Management. Paper presented at "Integriertes Küstenzonen-Management - Was wurde bisher getan, was ist in Zukunft zu tun?" Conference at 09.07.2007, Lübeck.

Atkins, 2004. ICZM in the UK: A Stocktake. Final Report, Queen's Printer and Controller, Norwich, pp. 96.

Autsch, J. and Toben, S., 2007. IKZM in Mecklenburg-Vorpommern. In: Bundesamt für Bauwesen und Bauordnung (Editor), Integriertes Küstenzonenmanagement. Informationen zur Raumentwicklung, Heft 5. Selbstverlag des Bundesamtes für Bauwesen und Bauordnung, Bonn, pp. 287-290.

Beatley, T., Brower, D. and Schwab, A., 2002. An Introduction to Coastal Zone Management. Island Press, Washington DC, pp. 285.

Bennedixsen, S. and De Guchteneire, P., 2003. Best practices in immigration services planning. Journal of Policy Analysis and Management, 22(4): 677-682.

Blumensaat, F., Tränckner, J., Bönisc, G., Koegst, T. and Krebs, P., 2006. Assessment of integrated management options: deficit analysis Dissemination platform for the EU project CD4WC. From http://isi.tu-dresden.de/twiki/bin/view/CD4WC/DeficitAnalysisD71, visited at 21.04.2007.

BMBF, 2002. Förderrichtlinien „Forschung für ein nachhaltiges Küstenzonenmanagement“. From http://www.ikzm-d.de/addons/pdfs/48_foerderrichtlinien.pdf, visited at 17.10.2007.

BMU, 2006. Integriertes Küstenzonenmanagement in Deutschland. Nationale Strategie für ein integriertes Küstenzonenmanagement (Bestandsaufnahme, Stand 2006), BMU, Bonn, pp. 99.

Boomert, A., 2007. Boomert Business Coaching B.V., Recreation enterprise, Oostburg. Personal communication at 06.11.2007.

Bray, D., Stelljes, N., Grossmann, I. and Rau, I., 2007. Perspektiven für deutsche Küstenregionen aus Sicht von Verwaltung und regionalen Interessenvertretern. GKSS-Bericht 2007/19, GKSS Research Centre, Geesthacht, pp. 49.

Bruns, A. and Froh, C., 2007. 'Leuchtturm-Projekte' und 'IKZM-Councils': Stand und Perspektiven von IKZM in Deutschland. Draft, GKSS Research Centre, Geesthacht, pp. 12.

Bryman, A., 1992. Quantitaive and qualitative research: further reflections on their integration. In: J. Brannen (Editor), Mixing Methods: Qualitative and Quantitative Research. Aldershot, Avebury, pp. 57-78.

Bulukin, L., 2006. Mobility as an attraction - leave the car behind and enjoy the coast at a leisurely pace. Flows. Magazine of the Interreg North Sea project 'SustAccess', Västra Götaland, Gothenburg, pp. 14-15.

Caddy, J., Wade, E., Surette, T., Hebert, M. and Moriyasu, M., 2005. Using an empirical traffic light procedure for monitoring and forecasting in the Gulf of St. Lawrence fishery for the snow crab. Fisheries Research, 76(1): 123-145.

Caddya, F. and Cochrane, K., 2001. A review of fisheries management past and present and some future perspectives for the third millennium. Ocean & Coastal Management, 44(1): 653-683.

Cicin-Sain, B. and Knecht, W., 1998. Integrated Coastal and Ocean Management: Concepts and Practices. Island Press, Washington DC, pp. 543.

Clark, J., 1992. Integrated management of coastal zones. FAO Fisheries Technical Paper No. 327, FAO, Rome pp. 167.

Clark, J., 1995. Coastal Management Handbook. CRC Press, Boca, pp. 720.

Costanza, R., d'Arge, R., de Groot, R.S., S, F., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P. and van den Belt, M., 1997. The Value of the World's Ecosystem Services and Natural Capital. Nature, 387: 253-260.

Crossland, C., Baird, D., Ducrotoy, J. and Lindeboom, H., 2005. The coastal zone - a domain of global interactions. In: C. Crossland, H. Kremer, H. Lindeboom, J. Marshall and M. Le Tissier (Editors), Coastal fluxes in the Anthropocene: The Land-Ocean Interactions in the Coastal Zone project of the International Geosphere-Biosphere Programme. Global Change - The IGBP Series. Springer Verlag, Berlin and Heidelberg, pp. 1-37.

CZMC, 2003. ICZM Funding Guide. From http://www.netcoast.nl/iczm_fundingguide/index.htm, visited at 09.01.2008.

Daschkeit, A., Beck, A. and Sterr, H., 2006. F+E-Vorhaben „Integriertes Küsten- und Meereszonenmanagement – Anforderungen an Strategie und Umsetzung“. Förderprojekt des Bundesamtes für Naturschutz (FKZ 805 82 007). Unterauftrag (Forschungsaufgabe) „IKZM-Zustandsindikatoren“. Final report, Christian Albert University Kiel, Geographic Institute, Kiel pp. 19.

de Boer, A., Povh, D. and van der Wegen, M., 2003. Principles of ICZM, Monitoring and Evaluation. From http://www.coastlearn.org/intro/monandeva.html, visited at 21.12.2007.

Defra, 2002. Safeguarding our seas – a strategy for the conservation and sustainable development of our marine environment, Defra Publications, London, pp. 80.

Defra, 2006a. Promoting an integrated approach to management of the coastal zone (ICZM) in England, Defra Publications, London, pp. 39.

Defra, 2006b. Report from the United Kingdom - Implementation of (2002/413/EC), Defra Publications, London, pp. 20.

Dehne, P., Fichtner, T., Hoffmann, J., Vetter, L., Kraft, D., Balfanz, A. and Hiller, H., 2007. Dialoge & regionale Partizipation, Indikatoren, Entscheidungshilfesysteme in IKZM. In: G. Schernewski, H. Janßen and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 19-35.

Dickow, A., 2007. Ministry of the Interior Schleswig-Holstein, Department of Regional Planning and Surveying, Coordination and Info Unit ICZM, Kiel. Personal communication at 07.06.2007.

Dickow, A., 2008. Ministry of the Interior Schleswig-Holstein, Department of Regional Planning and Surveying, Coordination and Info Unit ICZM, Kiel. Personal communication at 10.01.2008.

Dickow, A. and Liebrenz, F., 2007. IKZM in Schleswig-Holstein. In: Bundesamt für Bauwesen und Bauordnung (Editor), Integriertes Küstenzonenmanagement. Informationen zur Raumentwicklung, Heft 5. Selbstverlag des Bundesamtes für Bauwesen und Bauordnung, Bonn, pp. 283-285.

DOENI, 2006. Towards an Integrated Coastal Zone Management Strategy for Northern Ireland, DOENI, Belfast, pp. 91.

Dolch, T., 2004. Die Auswirkungen der Wasserqualität auf den Tourismus - Eine Studie am Beispiel des Oderästuars. In: G. Schernewski and T. Dolch (Editors), The Oder estuary - against the background of the European Water Framework Directive. Meereswissenschaftliche Berichte No. 57. Baltic Sea Research Institute IOW, Warnemünde, pp. 223-288.

Ductroy, J. and Pullen, S., 1999. Integrated coastal zone management commitments and developments from an international, European and United Kingdom perspective. Ocean & Coastal Management, 42(1): 1-18.

Erbguth, W., Edler, J. and Vandrey, A., 2006. Integration Küstengewässer. In: G. Schernewski and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse und Perspektiven, IKZM-Oder Berichte 22. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 55-60.

Erbguth, W., Edler, J. and Vandrey, A., 2007. IKZM - Integration der Küstengewässer. In: G. Schernewski, H. Janßen and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 80-90.

Erenstein, H. 2006. ICZM in the Netherlands. Spatial planning and coastal management. Paper presented at "Die nationale IKZM-Strategie und ihre Perspektiven". Conference at 27.-28.04.2006, Bremen.

EUCC, 2006. Integrated coastal management - do we really have a choice. Coastline Special, 15(1/2): 1-22.

EUCC, 2007. Coastal management in Germany. Coastline Special, 16(1): 1-28.

European Commission, 1999a. Lessons from the European's Commissions Demonstration Programme on Integrated Coastal Zone Management (ICZM), Office for Official Publications of the European Communities, Luxembourg, pp. 93.

European Commission, 1999b. Towards a European Integrated Coastal Zone Management (ICZM) Strategy: General Principles and Policy Options, Office for Official Publications of the European Communities, Luxembourg, pp. 32.

European Commission, 2000. Integrated Coastal Zone Management: A Strategy for Europe. COM(2000) 547, Brussels.

European Commission, 2006. Interreg III. Connecting Europeans regions. From http://ec.europa.eu/regional_policy/interreg3/, visited at 14.11.2007.

European Commission, 2007a. Commission regulation (EC) No 498/2007 of 26 March 2007 laying down detailed rules for the implementation of Council Regulation (EC) No 1198/2006 on the European Fisheries Fund. Offical Journal of the European Union, Brussels.

European Commission, 2007b. An Integrated Maritime Policy for the European Union. COM(2007) 574, Brussels.

European Environmental Agency, 2006. The changing faces of Europe's coastal areas, Official Publications of the European Communities, Luxembourg, pp. 107.

European Parliament and Council, 2002. Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management (ICZM). 2002/413/EC, Brussels.

European Union, 2007. European Regional Development Fund 2007-2013. Objective 3: European Territorial Cooperation. Interregional Cooperation Programme INTERREG IVC. Contributing to the European Commission Initiative "Regions for Economic Change". Operational Programme (CCI2007CB163PO046). European Union, Brussels, pp. 92.

Fahrenkrug, K., Melzer, M., Ulich, E. and Wittekind, J., 2001. Integriertes Küstenzonenmanagement (IKZM) - Eine Strategie für Schleswig-Holstein. Gutachten im Auftrag des Ministeriums für ländliche Räume, Landesplanung, Landwirtschaft und Tourismus des Landes Schleswig-Holstein, Institut Raum & Energie, Wedel, pp. 25.

FAO, 1992. Integrated Management of Coastal Zones. FAO Fisheries Technical Paper No.327, FAO, Rome, pp. 167.

Feilbach, M., 2004. Entwurf eines Integrierten Küstenzonenmanagementplans für die Odermündung. IKZM-Oder Berichte 2, Baltic Sea Research Institute IOW, Warnemünde, pp. 106.

Fichtner, T., 2006. Informelle Planung. Integriertes Küstenzonenmanagement (IKZM). RaumPlanung, 126/127(2006): 164-165.

Fichtner, T., 2007. University of Applied Sciences Neubrandenburg, Faculty of Landscape Architecture and Environmental Planning, Neubrandenburg. Personal communication at 16.10.2007.

Fichtner, T., 2008. University of Applied Sciences Neubrandenburg, Faculty of Landscape Architecture and Environmental Planning, Neubrandenburg. Personal communication at 16.01.2008.

FOD, 2006. National Belgian report on the imlementation of Recommendation 2002/413/EC - Integrated Coastal Zone Management, FOD, Brussels, pp. 27.

Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004. Gebiedsplan Natuurlijk Vitaal, Provincie Zeeland, Middelburg, pp. 143.

Gee, K., Kannen, A., Licht-Eggert, K., Glaeser, B. and Sterr, H., 2006. Integriertes Küstenzonenmanagement (IKZM): Raumordnungsstrategien im Küstenbereich und auf dem Meer. Abschlussbericht, BMVBS/BBR, Berlin, pp. 84.

Gemeente Sluis, 2007. Projecten & Plannen. Overzicht lopende projecte. From http://sluis.centriconline.nl/index.asp?nmoduleid=2&wgid=28&sc=0&spagetype=21&nPageID=2293&nCMSPageType=1, visited at 14.11.2007.

GESAMP, 1996. The contributions of science to integrated coastal management. GESAMP Reports and Studies No. 61, IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP, Rome, pp. 66.

Glaeser, B., Gee, K., Kannen, A. and Sterr, H., 2004. Auf dem Weg zur nationalen IKZM-Strategie: Perspektiven der Raumordnung. Documentation of an ICZM workshop at 23.- 24.10.2003, Social Science Research Center Berlin WZB, Berlin, pp. 70.

Glaeser, B. and Sekścińska, A., 2007. Empfehlungen und Ablaufschema für ein IKZM in der Odermündungsregion: Zwischenergebnisse. IKZM-Oder Berichte 34, EUCC – Die Küsten Union Deutschland e.V., Rostock, pp. 86.

Goni, R., 1998. Fisheries effects on ecosystems: an overview. Ocean & Coastal Management, 40(1): 37-64.

Gormsen, E., 1997. The impact of tourism on coastal areas. Geo Journal, 42(1): 39-54.

Haese, C., 2008. GKSS Research Centre, Institute for Coastal Research, Geesthacht. Personal communication at 14.01.2008.

Halliday, R., Fanning, L. and Mohn, R.K., 2001. Use of the traffic light method in fishery management planning. Canadian Science Advisory Secretariat, Ottawa, pp. 44.

Hamann, M., 2007. Ministry of the Interior Schleswig-Holstein, Department of civil protection, Kiel. Personal communication at 26.11.2007.

Hamann, M., 2008. Ministry of the Interior Schleswig-Holstein, Department of civil protection, Kiel. Personal communication at 11.01.2008.

Hoffmann, J., 2006. Indikatoren für ein Integriertes Küstenzonenmanagement - Theoretische Grundlagen. IKZM-Oder Berichte 20. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 81.

Hoffmann, J., 2007. Problemorientierte Indikatoren für ein IKZM in der Region Odermündung (deutsche Seite). IKZM-Oder Berichte 33, EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 79.

Hofstede, J. 2001. Participatory planning in coastal defence: A pilot study from the Baltic Sea coast of Germany. Conference proceedings. Paper presented at "36th Annual Conference of River and Coastal Engineers". Conference at 20.-22.06.2001, London.

Hofstede, J. 2004. Timmendorfer Strand und Scharbeutz: zwei Ostseegemeinden schützen sich vor Klimaänderungen. Unpublished conference proceedings. Paper presented at "Klimaänderung und Küstenschutz". Conference at 29.-30.11.2004, Kiel.

Hofstede, J. and Hamann, M., 2002. Integrated Management of Coastal Defence in Schleswig-Holstein: Experience and Challenge. In: G. Schernewski and U. Schiewer (Editors), Baltic Coastal Ecosystems: Structure, function and coastal zone management. Central Eastern development Studies. Springer, Berlin, pp. 377-388.

Hofstede, J. and Schernewski, G. 2005. Two coastal management and public participation case studies in Germany. Paper presented at "International Conference on Coastal

Conservation and Management in the Atlantic and Mediterranean (ICCCM)". Conference at 17.-20.04.2005, Tavira.

Horn, L., Niemann, F., Kaut, C. and Kemmler, A., 1994. SWOT Analysis And Strategic Planning - a manual. GFA Consulting Group, Hamburg, pp. 58.

IM-SH, 2003. Integriertes Küstenzonenmanagement in Schleswig-Holstein, Federal State Government Schleswig-Holstein, Kiel, pp. 35.

IM-SH, 2005. Richtlinie zur Förderung von Küstenschutzmaßnahmen in Schleswig-Holstein in der Bekanntmachung des Innenministeriums vom 8. Februar 2005, Amtsblatt für Schleswig-Holstein, 21.02.2005, pp. 175.

IOW, ARCADIS, HS-NB, WZB, UNI-GW, IÖR, OSU and IAOE, 2002. Forschung für ein Integriertes Küstenzonenmanagement in der Odermündungsregion (IKZM Oder), Leitantrag, unpublished manuscript. Baltic Sea Research Institute IOW, Warnemünde, pp. 25.

IOW, HS-NB, UNI-GW, OSU, IÖR, IGB, UNI-O, IFAÖ and ARCADIS, 2006. Forschung für ein Integriertes Küstenzonenmanagement in der Odermündungsregion (IKZM-Oder). Leitantrag - Folgeantrag, 2007 - 2010, unpublished manuscript. Baltic Sea Research Institute IOW, Warnemünde, pp. 42.

IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment. Report of the Intergovernmental Panel on Climate Change, Cambridge and New York, pp. 996.

IUCN, 1993. Cross-sectoral, Integrated Coastal Area Planning: Guidelines and Principles for Coastal Area Development, IUCN, Gland, pp. 63.

Janssen, G., Czarnecka-Zawada, S. and Konieczny, B., 2007. Regionales grenzüberschreitendes IKZM. In: G. Schernewski, H. Janßen and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 71-79.

Janßen, H., 2007. Baltic Sea Research Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 24.07.2007.

Janßen, H., 2008. Baltic Sea Research Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 10.01.2008.

Janßen, H. and Schernewski, G., in press. ICZM and Climate Change – The Oder/Odra estuary region. In: R. Krishnamoorthy et al. (Editors), Integrated Coastal Zone Management - The Global Challenge. Research Publishing Services, Singapore and Chennai.

Jickells, T., 1998. Nutrient biochemistry of the coastal zone. Science, 281(5374): 217-222.

Kannen, A., 2008. GKSS Research Centre, Institute for Coastal Research, Geesthacht. Personal communication at 10.01.2008.

Kannen, A. and Licht-Eggert, K., 2007. Managing changes in sea use across scales: Case Study North Sea and North Sea coast of Schleswig-Holstein In: R. Krishnamurthy et al. (Editors), Integrated Coastal Zone Management (ICZM). Research Publishing Services, New Delhi, pp. 82-112.

Kaul, J. and Reins, C., 2000. Abschlußbericht der Sensitivitätsanalyse zu einem Integrierten Küstenschutzkonzept für die 'Küstenniederung Timmendorfer Strand / Scharbeutz', Kaul & Reins GbR, Kiel, pp. 50.

Kay, R. and Alder, J., 1999. Coastal Planning and Management. Taylor & Francis, London and New York, pp. 380.

Knuijt, M., Almekinders, B., van der Vegt, L., van Dijk, T. and Heyse, S., 2002. Duurzame Kustontsluiting, OKRA Landschapsarchitecten, Utrecht, pp. 74.

Knuijt, M., Kijne, H., de Jong, H., Stelzer, B., van der Vegt, L. and Voogt, W., 2000. Integraal Kustzone Beheer West Zeeuwsch-Vlaanderen, OKRA Landschapsarchitecten, Utrecht, pp. 130.

Krause, G., 2008. Rupprecht Consult - Forschung & Beratung GmbH, Cologne. Personal communication at 16.01.2008.

Liebrenz, F., 2007. Ministry of the Interior Schleswig-Holstein, Department of Regional Planning and Surveying, Coordination and Info Unit ICZM, Kiel. Personal communication at 25.05.2007.

LOICZ, 2005. Science Plan and Implementation Strategy. IGBP Report 51/IHDP Report 18, IGBP Secretariat, Stockholm, pp. 60.

Löser, N., 2007a. Baltic Sea Reserach Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 25.09.2007.

Löser, N., 2007b. Forschung in der Odermündungsregion: Die erste Projektphase IKZM-Oder (2004-2007). In: G. Schernewski, H. Janßen and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 1-18.

Lucius, I. and Pickaver, A. 2006. A Progress Marker Set to measure the implementation of ICZM. Paper presented at "COASTMAN: Policies on Coastal Zone Management in the Baltic Sea Region ". Conference at 28.03.2006, Hamburg.

Maack, S., 2007. Baltic Sea Reserach Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 24.09.2007.

Maenhout, T., 2007. Municipality Sluis, Manager of tourism and recreation, Oostburg. Personal communication at 06.11.2007.

Maya, 2005. Marina and Yachting in the Lower North Sea, the Channel Area and the Irish Sea. Maya 1. Pilot projects. Sluis an Zee. From http://www.maya-net.org/index.php?url=/maya1/pilot/sluis_aan_zee, visited at 10.11.2007.

MELF, 1963. Generalplan Deichverstärkung, Deichverkürzung und Küstenschutz in Schleswig Holstein, MELF, Kiel, pp. 77.

Melzer, M. and Fahrenkrug, K., 2004. Umsetzung des Integrierten Küstenzonenmanagments in den deutschen Küstenländern. In: Bundesamt für Bauwesen und Raumordnung (Editor), Informationen zur Raumentwicklung, Heft 4. Selbstverlag des Bundesamtes für Bauwesen und Bauordnung, Bonn, pp. 515-533.

Milbert, A. and Schmitt, M., 2007. IKZM-relevante Indikatoren zur Messung des Zustands einer nachhaltigen Entwicklung der Küste in Deutschland. In: Bundesamtes für Bauwesen und Bauordnung (Editor), Integriertes Küstenzonenmanagement.

Informationen zur Raumentwicklung, Heft 5. Selbstverlag des Bundesamtes für Bauwesen und Bauordnung, Bonn, pp. 313-319.

Miles, M. and Huberman, A., 1994. Qualitative Data Analysis: An Expanded Sourcebook. SAGE Publications, Thousand Oaks, pp. 352.

MinVenW, 2000. 3e Kustnota. Traditie, Trends en Toekomst, MinVenW, The Hague, pp. 122.

MinVenW, 2002. Towards an Integrated Coastal Zone Policy. Policy agenda for the coast, Direct Dutch Publications BV, The Hague, pp. 47.

MinVenW, 2003. Processplan Zwakke Schakels in de Nederlandse kust, Direct Dutch Publications BV, The Hague, pp. 27.

MinVenW, 2005. EU Recommendation concerning the implementation of Integrated Coastal Zone Management in Europe. Report on Implementation in the Netherlands., MinVenW, The Hague, pp. 28.

MinVenW, 2007. Water, Kust en Zee, Zwakke schakels. From http://www.verkeerenwaterstaat.nl/onderwerpen/water/kust%5Fen%5Fzee/projecten/zwakke%5Fschakels/#1, visited at 10.11.2007.

MLR, 2001. Generalplan Küstenschutz. Integriertes Küstenschutzmanagement in Schleswig-Holstein, MLR, Kiel, pp. 70.

Nicholls, R. and Klein, R., 2005. Climate change and coastal management on Europe's coast In: J. Vermaat, L. Bouwer, K. Turner and W. Salomons (Editors), Managing European Coasts: Past, Present, and Future. Springer, Berlin and Heidelberg, pp. 199-225.

NOAA, 1972. Coastal Zone Management Act, Washington DC, pp. 40.

Olsen, S., Lowry, K. and Tobey, J., 1998. A Manual for Assessing Progress in Coastal Management. Coastal Management Report No. 2211, University of Rhode Island, Coastal Resource Centre, Narragansett, pp. 56.

Olsen, S., Lowry, K., Tobey, J., Burbridge, P. and Humphrey, S., 1997. Survey of Current Purposes and Methods for Evaluating Coastal Management Projects and Programs Funded by International Donors. Coastal Management Report No. 2200, University of Rhode Island, Coastal Resources Center, Narragansett, pp. 48.

Pacyna, J. and Hov, O., 2002. Sea to air transport of trace gases in the coastal zone: a literature review. Regional Environmental Change, 2(4): 185-200.

Pauly, D., Christensen, V., Dalsgaard, J., Froese, R. and Torres, F., 1998. Fishing down marine food webs. Science, 279(5352): 860-863.

Pickaver, A., Gilbert, C. and Breton, F., 2004. An indicator set to measure the progress in the implementation of integrated coastal zone management in Europe. Ocean & Coastal Management, 47(9-10): 449-462.

Poate, C. and Daplyn, P., 1993. Data for agrarian development. Questionaire design. Cambridge University Press, Cambridge, pp. 387.

Post, C. and Lundin, G., 1996. Guidelines for Integrated Coastal Zone Management. Environmentally Sustainable Development Studies and Monographs Series No.9, World Bank, Washington DC, pp. 16.

Provincie West-Vlaanderen, 2007. Duurzaam kustbeheer. Management structure and cooperation. From http://www.west-vlaanderen.be/jahia/Jahia/site/kustbeheer_en/pid/293, visited at 25.06.2007.

Provincie Zeeland, 2007. Informatie over het Provinciaal beleid. Project Waterdunen. From http://provincie.zeeland.nl/veiligheid/zwakkeschakels/stavaza_westvlaanderen/, visited at 11.11.2007.

Punch, K., 2005. Introduction to Social Research. SAGE Publications, London, Thousand Oaks and New Delhi, pp. 320.

Radziejewska, T. and Schernewski, G., 2008. The Szczecin (Oder-) Lagoon. In: U. Schiewer (Editor), Ecology of Baltic Coastal Waters, Ecological Studies, Vol. 197. Springer, Berlin, pp. 115-130.

Reese, S., Markau, H. and Sterr, H., 2001. Wertermittlung hochwassergefährdeter Gebiete in den Gemeinden Scharbeutz und Timmendorfer Strand, Forschungs- und Technologiezentrum Westküste, Büsum, pp. 63.

Riemer, J., 2007. Office for Rural Areas Schleswig-Holstein, Kiel. Personal communication at 26.11.2007.

Roberts, H. 2007. Marine and Coastal Management in England and Wales. Paper presented at "4th PlanCoast Conference". Conference at 20.-22.11.2007, Berlin.

Rose, R., 1991. What is lesson-drawing? Journal of Public Policy, 11(1): 3-30.

Rupprecht Consult and International Ocean Institute, 2006. Evaluation of Integrated Coastal Zone Management (ICZM) in Europe. Final Report, Rupprecht Consult - Forschung & Beratung GmbH, Cologne, pp. 255.

S.A.I.L., 2003. Integrated Coastal Zone Management goes Dutch. SAIL news. Newsletter No.1, pp. 12.

Sarda, R., Mora, J. and Avila, C., 2005. Tourism development in the Costa Brava (Girona, Spain) – how integrated coastal zone management may rejuvenate its lifecycle. In: J. Vermaat, L. Bouwer, K. Turner and W. Salomons (Editors), Managing European Coasts: Past, Present, and Future. Springer, Berlin and Heidelberg, pp. 291-314.

Schabelon, H., Meissner, K., Brosda, K., Schultz, A. and Sordyl, H., 2007. GIS-basierte ökologische Daten als Grundlage für ein integriertes Küstenzonenmanagement in der Odermündungsregion. In: G. Schernewski, H. Janßen and N. Löser (Editors), Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 55-70.

Schernewski, G. 2002. Integrated Coastal Zone Management (ICZM): From European strategy to practise in Germany. Paper presented at "First German-Chinese Joint Symposium on Coastal and Ocean Engineering". Conference at 10.-12.04.2002, Rostock.

Schernewski, G., 2004. Von der Agenda 21 im Ostseeraum zum regionalen integrierten Küstenzonenmanagement. In: Hafenbautechnische Gesellschaft e.V (Editor), Jahrbuch der Hafenbautechnischen Gesellschaft. 54. Band. Schiffahrtsverlag Hansa, Hamburg, pp. 132-136.

Schernewski, G., 2006. Integriertes Küstenzonenmanagement im Ostseeraum: Hintergrund und Praxis. Wasser und Abfall, 8(9): 20-26.

Schernewski, G., 2007. Baltic Sea Research Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 24.09.2007.

Schernewski, G., 2008. Baltic Sea Research Institute IOW, Coastal Zone Research and Management, Warnemünde. Personal communication at 11.01.2008.

Schernewski, G., Behrens, H., Bock, S., Dehne, P., Erbguth, W., Glaeser, B., Janssen, G., Kazakos, W., Neumann, T., Permien, T., Schuldt, B., Sordyl, H., Steingrube, W., Vetter, L. and Wirtz, K., 2004. Integriertes Küstenzonenmanagement in der Odermündungsregion (IKZM Oder). In: G. Schernewski and T. Dolch (Editors), Geographie der Küsten und Meere, Coastline Reports 1. EUCC - Die Küsten Union Deutschland e.V., Warnemünde, pp. 183-194.

Schernewski, G., Hoffmann, J., Löser, N., Dreisewerd, M., Stavenhagen, P. and Grunow, B., 2006. Measuring the progress and outcomes of Integrated Coastal and Ocean Management: The German Oder Estuary case study. Report to the UNESCO Intergovernmental Oceanographic Commission. IKZM-Oder Berichte 21, EUCC – Die Küsten Union Deutschland e.V., Rostock, pp. 41.

Schernewski, G., Janßen, H. and Löser, N., 2007. Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30, EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 120.

Schernewski, G., Löser, N. and Sekścińska, A., 2005. Integrated Coastal Area - River Basin Management (ICARM): The Oder/Odra case study. In: B. Glaeser, A. Sekścińska and N. Löser (Editors), Integrated Coastal Zone Management at the Szczecin Lagoon: Exchange of experiences in the region. Coastline Report 6. EUCC - The Coastal Union, Leiden, pp. 43 - 54.

Schmitz, R., 2007. Vorhersage von historisch aufgetretenen Stürmen über der Ostsee mithilfe des Ensemple Prediction System und COSMO. Abschlussbericht im Rahmen des Projekt MUSTOK, University Siegen, Siegen, pp. 82.

Schuchardt, B., 2007. Bio Consult, Bremen. Personal communication at 31.05.2007.

Scialabba, N., 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO guidelines, Environment and Natural Resources Service, FAO, Rome, pp. 256.

Scottish Executive, 2005. Seas the Opportunity. A Strategy for the Long Term Sustainability of Scotlands Coasts and Seas, Crown, Edinburgh, pp. 39.

Secchi, P., 1999. Proceedings of Alerts and Lessons Learned: An Effective way to prevent failures and problems. Technical Report WPP-167, Noordwijk, pp. 57-61.

Sewig, P., 2007. IKZM in Niedersachsen. In: Bundesamt für Bauwesen und Bauordnung (Editor), Integriertes Küstenzonenmanagement. Informationen zur Raumentwicklung, Heft 5. Selbstverlag des Bundesamtes für Bauwesen und Bauordnung, Bonn, pp. 291-294.

Shipman, B. and Stojanovic, T., 2007. Facts, Fictions, and Failures of Integrated Coastal Zone Management in Europe. Coastal Management, 35(2&3): 375-398.

SPICOSA, 2007. WP3, System Design, v.1.25 (draft report), Napier University, Edinburgh, pp. 187.

Steingrube, W., Scheibe, R. and Feilbach, M., 2007. Entwicklung einer großräumigen Tourismuskonzeption. In: G. Schernewski, H. Janßen and N. Löser (Editors),

Forschung in der Odermündungsregion: Ergebnisse 2004-2007, IKZM-Oder Berichte 30. EUCC - Die Küsten Union Deutschland e.V., Rostock, pp. 91-102.

SustAccess, 2005. Improving Connection between Gateways and the Hinterland - New Innovative Regional Transport Development Concepts, Västra Götaland, Gothenburg, pp. 40.

SustAccess, 2006. SustAccess. Bridging Environment and Transport. From http://www.sustaccess.org, visited at 23.10.2007.

Syvitski, J., Harvey, N., Wolanski, E., Burnett, C., Perillo, G. and Gornitz, V., 2005. Dynamics of the coastal zone. In: C. Crossland, H. Kremer, H. Lindeboom, A. Marshall and M. Le Tissier (Editors), Coastal fluxes in the Anthropocene: The Land-Ocean In-teractions in the Coastal Zone project of the International Geosphere-Biosphere Programme. Global Change - The IGBP Series. Springer, Berlin and Heidelberg, pp. 39-94.

ten Braak, M., 2007. Municipality Sluis, Project office 'Natuurlijk Vitaal', Oostburg. Personal communication at 06.11.2007.

Tesch, R., 1990. Qualitative Research: Analysis Types and Software Tools. Basingstoke, Falmer, pp. 344.

Thamm, R., Bock, S. and Schernewski, G., 2007. Regional Information Systems and Coastal Databases for ICZM in Germany – are they efficient and informative? In: G. Schernewski, B. Glaeser, R. Scheibe, A. Sekścińska and R. Thamm (Editors), Coastal Development: The Oder estuary and beyond, Coastline Report 8. EUCC - The Coastal Union, Leiden, pp. 151-161.

Turner, R.K., Subak, S. and Adger, N., 1996. Pressures, Trends, and Impacts in Coastal Zones: Interactions between socio-economic and natural systems. Environmental Management, 20(2): 159-173.

UNEP, 1995. Guidelines for integrated management of coastal and marine areas with particular reference to the Mediterranean basin. UNEP Regional Seas Reports and Studies No.161, Ocean and Coastal Areas Programme Activity Centre (OCA/PAC), Split, pp. 80.

UNEP, 1999. Conceptual Framework and Planning Guidelines for Integrated Coastal Area and River Basin Management. Priority Actions Programme, UNEP/MAP/PAP, Split, pp. 78.

UNEP, 2006. Marine and coastal ecosystems and human well-being: A sythesis report based on the findings of the Millenium Ecosystem Assessment, UNEP, Nairobi, pp. 67.

UNESCO, 1997. Methodological Guide to Integrated Coastal Zone Management. IOC Manuals and Guides 36, UNESCO, Paris, pp. 47.

United Nations, 1992. Rio Declaration on Environment and Development. Report of the United Nations Conference on Environment and Development, Annex I. A/CONF.151/26 (Vol.1), Rio de Janeiro.

Vermaat, J., Bouwer, L., Turner, K. and Salomons, W., 2005. Managing European Coasts: Past, Present, and Future. Springer, Berlin and Heidelberg, pp. 387.

Vester, F., 2002. Die Kunst vernetzt zu denken. Deutscher Taschenbuch Verlag, Munich, pp. 372.

Vitousek, P., Mooney, H., Lubchenco, J. and Melilli, J., 1997. Human domination of Earth's ecosystems. Science, 227(5325): 494-499.

VLIZ, 2003. Duurzaamheidsbarometer voor de kust. Onze 20 indicatoren. From http://www.vliz.be/projects/indicatoren/db.php, visited at 27.06.2007.

VROM, 2005. Nota Ruimte, VROM/LNV/VenW/EZ, The Hague, pp. 200.

Weller, A., 2001. Editorial Peer Review: its Strengths and Weaknesses. American Society for Information Science and Technology, Medford, pp. 360.

Welp, M., 2000. Planning Practice on three Island Biosphere Reserves in Estonia, Finland and Germany: a comparative study, INSULA (International Scientific Council for Island Development) c/o UNESCO-MAB, Paris, pp. 254.

Wenk, R., 2005. Raumplanung als Integriertes Küstenzonenmanagement. In: B. Glaeser, A. Sekścińska and N. Löser (Editors), Integrated Coastal Zone Management at the Szczecin Lagoon: Exchange of experiences in the region. Coastline Reports 6. EUCC - The Coastal Union, Leiden, pp. 63-71.

Wenk, R., 2007. Agency for regional and spatial planning, Department of nature conservation, agriculture, forestry, fishery, resources and waste management, Greifswald. Personal communication at 25.09.2007.

Wenk, R., 2008. Agency for regional and spatial planning, Department of nature conservation, agriculture, forestry, fishery, resources and waste management, Greifswald. Personal communication at 11.01.2008.

WG-ID, 2006. Report on the use of the ICZM indicators from the WG-ID. A contribution to the ICZM evaluation. Version 1, European Topic Centre for the Terrestrial Environment, Barcelona, pp. 44.

Wikimedia Commons, 2007. Image: Same sex marriage map Europe. From http://commons.wikimedia.org/wiki/Image:Same_sex_marriage_map_Europe.svg, visited at 19.01.2008.

Appendix

A Questionnaire results of gap analysis

Table 8: Result of the expert interviews showing ICZM gaps in Germany (left column), their associated group (middle column), and their total number of nominations within the interviews (right column)

Gaps according to expert interviews	Gap group	Nr.
Responsibilities and tasks for ICZM implementation levels (national, federal, regional) are not sufficiently addressed (Fichtner, 2008). The targets of ICZM (such as consolidation of coastal sectors) are too far reaching for an informal implementation (Fichtner, 2008). Missing of an integrative ICZM responsibility at national and federal state level (Janßen, 2008). Legal bodies are poorly coordinated in terms of formal implementation of ICZM (Janßen, 2008). Federal structure of Germany holds the risk that all federal states develop their own uncoordinated ICZM strategies (Krause, 2008). Legislative division of land, coastal waters and EEZ avoids integrative implementation (Krause, 2008). ICZM is formally non-binding (Schernewski, 2008). Lack of formal structures (Schernewski, 2008). Difficulties of formal implementation and competencies because of complex German federal structure (Schernewski, 2008). Hierarchy, structure and responsibilities are poorly defined for ICZM in Germany (Wenk, 2008).	Fuzziness concerning formal implementation of ICZM	10

Too little tools and instruments to execute ICZM aspects (such as participation, integration and evaluation) in practice (Ahlhorn, 2008). Little practical experience of ICZM project execution (Dickow, 2008). ICZM is not an applicable management approach, but a policy target. ICZM lacks exemplary descriptions of project executions (Fichtner, 2008). Missing of best-practice experiences, available for the wide public (Haese, 2008). Fuzzy conensus (set of criteria, regulations) and poor classification of ICZM executions (Haese, 2008). Little collaboration of horizontal sectors (Haese, 2008). Unclear how participation according to ICZM principles works in practice (Krause, 2008). Missing of applicable guidelines for the execution of ICZM projects (Schernewski, 2008). Lack of local/regional best-practice experiences, by what the benefits of ICZM are unknown (Schernewski, 2008).	Lack of best-practice experience and knowledge-transfer	9
ICZM activities are poorly connected and coordinated with each other. A Coordination Point is missing (Haese, 2008). Poor interlinkage of science and best-practice (Hamann, 2008). Lack of interlinking top-down (abstract, strategic and political papers) and bottom-up (precise wishes of local stakeholders) approaches (Kannen, 2008). Poor cooperation of vertical operational levels (Kannen, 2008).	Lack of interlinking top-down and bottom-up activities	4
ICZM process is lacking integrative approaches. Sectoral approaches by all professional plannings (Ahlhorn, 2008). Lack of horizontal integration of various sectors (Janßen, 2008). Missing participation of stakeholders (especially from the economic sector) in local/regional ICZM activities (Kannen, 2008). Missing integration of economic and social sectors (Krause, 2008).	Lack of horizontal integration	4
Fuzzy definitions of ICZM lead to various interpretations (Ahlhorn, 2008). Current definition of ICZM according to BMU is not adequate to establish ICZM in coastal zones (Fichtner, 2008). Heterogeneous definitions of ICZM lead to barriers for project execution and formal implementation (Janßen, 2008).	Fuzzy definition of ICZM	3
The local level is little aware of ICZM's benefits (Dickow, 2008). Benefits of ICZM are unclear to local and regional stakeholders, which lead to a lack of acceptance (Fichtner, 2008). Strengths and benefits of ICZM do not get across to local stakeholders (Janßen, 2008).	Benefits of ICZM are unclear	3

Available information on ICZM are often too scientific (Dickow, 2008). ICZM process in Germany is too much driven and affected science, and therewith far away from practice (Hamann, 2008).	ICZM as a too scientific approach	2
Missing adaptation of ICZM towards new developments, such as climate change (Kannen, 2008).	Weak adaptation to new developments	1

B Questionnaire of ICZM project evaluation

B I German version

BLOCK 1: ERFAHRUNGEN ZU IKZM-ODER

SCHRITT 1: VORBEDINGUNGEN VON PLANUNG, MANAGEMENT UND FINANZIERUNG

1. Zu Beginn des Projektes wurde ein Problemfindungsprozess durchgeführt. Was wird von den Projektpartnern als Hauptproblem gesehen? Was von der Region? Gibt es Unterschiede?
2. Wurden Planungsoptionen, die z.B. politisch nicht durchsetzbar sind, ausgeschlossen? Wenn ja, welche?
3. Wurden zu Beginn des Projektes die wichtigsten Akteur und deren Beziehungen zueinander analysiert (Stakeholder Analysis)?
4. Gab es in der Vorphase Diskussionen mit den Akteuren über ein zukünftiges Management?
5. Wurden Vorbedingungen/Möglichkeiten der politischen Implementierung des IKZM-Projektes am Anfang diskutiert?
6. Wurde nach politischer Unterstützung für das Projekt in der Region/im Land gesucht? War das wichtig?

SCHRITT 2: BEWERTUNG DES SACHVERHALTES

7. Welche der erhobenen Bestandsaufnahmen stellten sich als besonders nützlich heraus? Welche als verzichtbar?
8. Wurden Akteure um Stellungnahmen/Diskussionen zu neuen Ergebnissen gebeten?
9. Eignen sich Indikatoren für die Bewertung des Sachverhaltes und als Diskussionsgrundlage in der Region?

SCHRITT 3: ERSTELLUNG EINES PLANS ODER EINER STRATEGIE

10. Wurden Verantwortliche Institutionen und Personen für die Umsetzung von IKZM benannt? War es deutlich welche Aufgaben die Institutionen und Personen übernehmen?
11. Waren die Handlungsanweisungen/Empfehlungen für die Umsetzung des Projektes ausreichend konkret und Praxis orientiert ausgestaltet? Gab es positives oder negatives Feedback aus der Region?
12. Konnte den Akteuren der Nutzen des Projekts vermittelt werden? Wenn ja, welcher?

SCHRITT 4: FORMELLE IMPLEMENTIERUNG

13. Wie wurden die IKZM Inhalte in die Politik getragen? Welche Strategien waren erfolgreich, welche weniger erfolgreich für die Unterstützung der politischen Entscheidungsträger?
14. Konnte das IKZM wirksam in bestehende Strukturen, Initiativen und Netzwerke integriert werden?
15. Gab es eine geeignete Plattform für die Implementierung von IKZM? Konnte sie alle IKZM Aufgaben alleine übernehmen?
16. Sehen Sie evtl. andere Möglichkeiten, IKZM effizient zu implementieren? Wenn ja, wo und wie?
17. Konnten langfristige Finanzierungsmöglichkeiten gefunden werden? Auch solche, die über die Projektlaufzeit hinaus laufen werden?

SCHRITT 5: PRAKTISCHE UMSETZUNG

18. Welche Maßnahmen können als praktische Umsetzung des IKZM Projektes verstanden werden?
19. Wurden die wichtigsten Akteure in die praktische Umsetzung involviert? Wenn ja, wie und mit welchen Erfahrungen?

20. Werden die Tätigkeiten des Projektes in der Region wahrgenommen? Wenn ja, mit welchen Erfahrungen?
21. Konnte das Bewusstsein für IKZM in der Öffentlichkeit und Politik gestärkt werden? Wenn ja, wie?

BLOCK 2: ‚LESSONS LEARNED'

22. Bitte nennen Sie aus Ihrer Sicht die drei relevantesten Empfehlungen zur Verbesserung des IKZM Projekts.
    1.
    2.
    3.
23. Welche drei wichtigen Erfahrungen aus dem IKZM Projekt sollten auf nationaler Ebene unbedingt Beachtung finden?
    1.
    2.
    3.

B II Dutch version

BLOK 1: ERVARINGEN

STAP 1: VOORWARDEN VOOR PLENNING, MANAGEMENT EN FINANCIEERING

1. Warom is de initiatief ‚Integraal KustZone Beheer' (IKZB) begonnen? Wat was de aanleiding? Wie speelde daar een belangrijk rol bij?
2. Was er een konkrete problem definitie in de regio vordat IKZB is begonnen? Wie heeft het problem gedefinieert: bevolking of vak expertise?
3. Heeft men vordat het projekt begon een stakeholder-analysis doorgevoert?

4. Zijn er in de voorfase ook discussies gevoerd met stakeholders over toekomstig kustmanagement?
5. Was er een discussie over formelle implementatie (bijv. in bestaande regelgeving) in het begin van de initiatief?
6. Heeft u getracht politieke steun te krijgen voor het initiatief? Op regionaal of landelijke niveau?
7. Is er naar financieeringsmogelijkheiden gezoecht? Is eer ook naar lange termijn financieering gezoecht, die ook doorloopt naardat het initiatief beeindigt is? Hoe is het initiatief outeindelijk gefinancieerd? Wie betalt voor de IKZB werkplaats?

STAP 2: BOEDELBESCHRIJVING EN BEORDEELING

8. Zijn er voldoende sociaale, ecologische en economische factooren onderzoekt? Welke precies? Welke zijn bijzonder belangrijk gewest?
9. Zijn de stakeholders om hun meining gevragt met betrekking tot de niewe resultaaten?
10. Is er zamen met de stakeholders een motto ontwikkelt?
11. Waren de stakeholders op de hoogte van het nut van de initiatief?

STAP 3: ONTWIKKELING VAN EEN PLAN OF STRATEGIE

12. Is er een plan/strategie ontwikkelt voor verschillende sectoren?
13. Staat er in het plan vermeldt, welke personen of instancies verantwoordelijkheid hebben voor de formeel implementatie en praktische uitvoering?
14. Beschrijft het plan handleidingen en zijn deze konkret en praktisch toepassbar?
15. Benoemt de plan moegelijke zamenwerkingen met andere kustmanagement projekten?

STAP 4: FORMEEL IMPLEMENTATIE

16. Waar is IKZB West Zeeuws-Vlaanderen uberhaupt implementiert: Op het gebied van kustveiligheid?
17. Was het mogelijk het iniatiatief in bestaande structuren te integreeren?
18. Op welke manier zijn de interessen van de initiatief in de politiek gedragen? Welke strategien zijn succesful gewest voor de steun van beleidsmaker?
19. Was er een uitwisseling van informatie tussen de nationale/provinciale en regionaale/lokaale niveau?

STAP 5: PRAKTISCHE UITVOERING

20. Hoeveel IKZB-projekten worden in uitgevoerd?
21. Zijn de verandwoordelijkheiden en taaken deudelijk?
22. In hoe ver kunnen (potentieele) lokaale uitvoerers aan informatie komen om een projekt uit te voeren?
23. Worden de aktiviteiten van de projekten in de regio waar genomen? In hoeveere wordt de bewuustzijn voor de kust gesterkt?

STAP 6: EVALUATIE

24. Werd de IKZB initiatief regelmatig gemodifizeerd op basis van eigen ervaringen?
25. Zijn er ook evaluaties door externe aktoren gemaakt/in plenning?

BLOK 2: ‚LESSONS LEARNED'

26. Geev ajb. de drie meest relevante aanbeveelingen om het initiatief te verbeteren.
    1.
    2.
    3.
27. Welke drie belangrijke ervaringen van het initaitief zouden door andere IKZB initiatiefen overgenomen kunnen worden?
    1.
    2.
    3.

C Evaluation results of bottom-up approach

Table 9: Evaluation results of 'ICZM-Oder estuary' presented according to ICZM evaluation framework and traffic light procedure, at which the green traffic light (TL) stands for 'fulfilled', the yellow for 'partly fulfilled' and the red for 'not fulfilled'

Step	Action	Description	TL	Results
1. Identification of preconditions for planning, management and funding	1.	Choosing an issue or problem to address		The project issue to address was determined by the tender of the German Federal Ministry of Education and Research (see BMBF, 2002) and later concretised by literature review of regional documents and conversations with ministries and regional administrations (see IOW et al., 2002).
	2.	Elimination of unenforceable management options		After the problem finding, policy issues were eliminated where ICZM has no competence, namely economic and social development as well as tourism. In a second step the policy issues remained were discussed with the Ministry Of Environment Mecklenburg-Western Pomerania. Thereupon management options were eliminated which deal with the terrestrial coast, such as agriculture and traffic development (Schernewski, 2007).
	3.	Identification of relevant stakeholders		In the beginning of the initiative a non-written stakeholder analysis was conducted and resulted in a mailing list, which has not been taken into consideration for the following processes (Fichtner, 2007).
	4.	Discussions on focal management issues		Focal management issues were pre-determined by the tender of the BMBF which left very little room for discussions between the project partners and the steering committee. No discussions took place with the regional public (Fichtner, 2007).
	5.	Identification on scale and extent of the issue		The scale and the extent of the project was clearly defined in the project proposal by defining the investigation area (Regional Agenda '*Stettiner Haff*' area plus coastal waters) and working packages (see IOW et al., 2002).
	6.	Definition of formal implementation possibilities		Before the start of the project it was clarified, that the Regional Agenda '*Stettiner Haff*' is the platform for formal implementation. Further it should being supported by a steering committee, which consisted of policy and decision-makers of the region and federal state (see IOW et al., 2002).

	7.	Obtaining endorsement of policy		Very early contact and collaboration with decision-makers of administrations and politics from regional to international level. Examples are the rural districts '*Ostvorpommern'* and '*Uecker-Randow'*, the Ministry of Environment of Mecklenburg-Western Pomerania and UNEP (see IOW et al., 2002).
	8.	Identification of sustained funding		Funding of the 'ICZM-Oder' depends on the project financing of BMBF (at most until 2010) and the political support of the decision-makers (possible change every legislation period). But long-term financing is currently discussed, for instance through cooperation with regional organisations and economy (Löser, 2007b) or by realisation of practical ICZM measures and functioning as an international case study (Schernewski, 2007).
2. Assessment	9.	Environmental, social and institutional issues		A huge spectrum of stocktakings, assessments and analysis were conducted. To name a few: Stocktaking of administration structures (see Janssen et al., 2007), stocktaking of legal foundations for ICZM (see Erbguth et al., 2007), analysis of all relevant environmental data and information (see Schabelon et al., 2007), status quo analysis of tourism (see Steingrube et al., 2007), utilisation and conservation as well as user conflicts (see Erbguth et al., 2006).
	10.	Invitation for review and response		The assessment results were not reviewed by public stakeholders (Löser, 2007a). Even though they were presented to the members of the steering committee, they were not reviewed and discussed (Fichtner, 2007).
	11.	Defining benefits of the ICZM initiative		Amongst the project partners the benefit of 'ICZM-Oder' is conducting research and gaining knowledge (Schernewski, 2007). Amongst regional stakeholders (administrations, policy-maker and the public) the benefits of the project hardly couldn't get across (Wenk, 2007). The support of the Regional Agenda '*Stettiner Haff*' is partly seen as a benefit for the region (Fichtner, 2007).
	12.	Definition of a shared goal/overall concept		A satisfying transboundary overall concept could not be developed (Schernewski, 2007). It was noticed by the stakeholders as being too scientific (Steingrube et al., 2007).
3. Preparation of a plan/strategy	13.	Conducting research targeted on CM		A wide spectrum of research was conducted which aimed towards management issues, such as recommendations for 'real-world' implementation of ICZM in the German legal system (see Erbguth et al., 2007) or recommendations for coastal management (see Janßen and Schernewski, in press).

	14.	Inclusion of marine and terrestrial coast		The investigation area comprises the marine and terrestrial coast and research also includes both conditions as the user-conflict analysis (see Janssen et al., 2007) shows: It defines seven relevant fields for action: nature conservation, agriculture, tourism, maritime economy, shipping, fishery and water pollution
	15.	Development of scenarios, cost and benefits, alternatives		Future scenarios of regional change – 2020, 2050, 2100 – are intended for the third project phase (see IOW et al., 2006).
	16.	Participation of stakeholders		Public stakeholders were not involved in the preparation process The results were presented to the members of the steering committee but they were not (or to a very little extent) discussed there (Fichtner, 2007).
	17.	Inclusion of co-operation possibilities		Cooperation with other ICZM projects at national level (e.g. Coastal Futures) and international level (e.g. SPICOSA). Further international cooperation with UNEP, LOICZ, UNESCO, BALLOON (Baltic Lagoon Network) and EUCC (Schernewski et al., 2007).
	18.	Development of a multi sectoral plan/strategy		Development of a ICZM plan for the German and Polish side (see Feilbach, 2004). It has recommendation character and does not constitute a strategic paper (Löser, 2007a)
	19.	Nomination of framework for formal implementation		Before the start of the project it was clarified, that the Regional Agenda ‘ *Stettiner Haff*’ is the platform for formal implementation (see IOW et al., 2002).
	20.	Formulation of practical instructions		Not yet performed but provision is made for the second and third project phase (see IOW et al., 2006)
4: Formal implementation	21.	Obtaining governmental mandate		Through involvement of sectoral planning agencies (of the region and the federal state) in the steering committee ICZM issues could be transferred to the governmental level (Janßen, 2007).
	22.	Integration in existing structures		‘ICZM Oder’ is integrated in the Regional Agenda ‘*Stettiner Haff*’. Further, the abstract ICZM term has been taken-up in the regional development plan (‘*Landesraumentwicklungsprogramm*’) of Mecklenburg-Western Pomerania (see AM-MV, 2005).

	23.	Nomination of responsibilities		There are no responsibilities nominated explicitly. But since ICZM is formally implemented in the Regional Agenda '*Stettiner Haff*' and in the regional development plan of the federal state, people and institutions have the legal support to initiate or maintain ICZM.
	24.	Nomination of explicit tasks		Even though 'ICZM Oder' prepared recommendations for formal implementation, there do not exist explicit tasks (Wenk, 2007).
	25.	Flow of information: top down and bottom up		A lot of regional information on ICZM could be delivered to the national and international level through cooperations, publications and presentations (Schernewski, 2007). But in turn, very little information of the (inter-)national and federal state level reached the public in the region (Wenk, 2007).
5. Practical implementation	26.	Nomination of responsibilities		The responsibilities of the practical measures (e.g. online information system, online learning system, newsletter, Geographic Information System (GIS)-ICZM, workshops, and conferences) lie with the project partners, but not with regional stakeholders.
	27.	Nomination of explicitly tasks		The performer of practical measures, regional administrations and the public, were not reached with explicitly tasks (Fichtner, 2007; Wenk, 2007).
	28.	Ensuring availability of coastal info		The data available has almost no use for practitioners since it is very scientific and too in-depth (Wenk, 2007). But all data is easily accessible via the project website 'www.ikzm-oder.de'.
	29.	Tackling main ICZM-related problems		'ICZM Oder' tackles scientific problems, but no regional problems.
6. Evaluation	30.	Conducting periodic external evaluations		First evaluations (project structures, processes and tools) are currently (02.2008) in process. Thereby it is a matter of internal evaluation (Maack, 2007).
	31.	Adaptation of ICZM to changing conditions		The orientation of the project workings was modified and the composition of the project partner changed (see IOW et al., 2006).

Table 10: Evaluation results of 'ICZM-Bay of Lübeck' presented according to ICZM evaluation framework and traffic light procedure, at which the green traffic light (TL) stands for 'fulfilled', the yellow for 'partly fulfilled' and the red for 'not fulfilled'

Step	Action	Description	TL	Results
1. Identification of preconditions for planning, management and funding	1.	Choosing an issue or problem to address		The problem of coastal vulnerability through flooding and erosion was first mentioned 1963 in the master plan on coastal defence ('*Generalplan Küstenschutz'*) (see MELF, 1963). Later, in 1999 it was chosen and addressed by technical administrations in collaboration with the public (Hamann, 2007).
	2.	Elimination of unenforceable management options		Since the focus of the project was coastal protection, only few management options were feasible (see Kaul and Reins, 2000), whereby automatically unenforceable options were eliminated.
	3.	Identification of relevant stakeholders		No stakeholder analysis in written form was conducted, but the project initiators such as technical administrations and mayors of the municipalities identified relevant stakeholders in their first meetings (Hamann, 2007).
	4.	Discussions on focal management issues		Focus on coastal protection issues was determined. But therein management options were open and consequently discussed by the stakeholders during the meetings of the sensitivity analysis (Riemer, 2007).
	5.	Identification on scale and extent of the issue		The investigation area was clearly defined by the expanse of the two municipalities (Kaul and Reins, 2000). The extent of the project was clearly outlined by its definition as a coastal protection project (MLR, 2001).
	6.	Definition of formal implementation possibilities		Since it is in first instance a project on coastal protection, the formal implementation was out of question: The '*Generalplan Küstenschutz'* (MLR, 2001) builds the legal regulation and the Ministry of Agriculture, Environment and Rural Areas of Schleswig-Holstein is responsible for its implementation.
	7.	Obtaining endorsement of policy		At federal state level the responsible ministers could be won for the project. At the municipal level the majors of Timmendorfer Strand and Scharbeutz were willed to support the initiative extensively (Hamann, 2007).

	8.	Identification of sustained funding		It is clarified by funding guidelines of Schleswig-Holstein (IM-SH, 2005) that construction of municipal coastal protection measures are financed by the municipalities (minimum 10%) and federal state (maximum 90%). Furthermore it is determined that the municipalities have to maintain the new constructions for a minimum of 15 years (IM-SH, 2005).
2. Assessment	9.	Environmental, social and institutional issues		Environmental, social and institutional issues were assessed, whereas their focus was very much orientated on the problem definition and therewith narrow.
	10.	Invitation for review and response		Together nine meetings with 50 participants in total were organised where actual results were presented and comments on them were incorporated (Kaul and Reins, 2000).
	11.	Defining benefits of the ICZM initiative		Benefits for participants were and still are obvious: coastal protection and economic maintenance through tourism (Riemer, 2007).
	12.	Definition of a shared goal/overall concept		An overall concept has not been developed in written form. But continuously discussions led to a latent shared goal of all participants: Economic maintenance of tourism and natural scenery in combination with flooding safety (Hamann, 2007).
3. Preparation of a plan/ strategy	13.	Conducting research targeted on CM		According to Riemer (2007) additional research was not necessary since coastal management options were limited.
	14.	Inclusion of marine and terrestrial coast		The measures of the feasibility study referred to the terrestrial coast only. But impacts of the Baltic Sea on the shore were taken into consideration (see Reese et al., 2001).
	15.	Development of scenarios, cost and benefits, alternatives		During the sensitivity analysis a model simulation with different scenarios of coastal protection was run. For each scenario potential monetary costs and benefits were calculated (see Kaul and Reins, 2000).
	16.	Participation of stakeholders		One out of four feasibility studies was chosen by a jury which consisted of members of the municipality and technical administrations (Riemer, 2007).

	17.	Inclusion of co-operation possibilities		The feasibility study does not comprise cooperations with other coastal management projects.
	18.	Development of a multi sectoral plan/strategy		The feasibility study developed considered only the sector of coastal protection. But through involvement and collaboration with other sectors (such as tourism and retail), the results of the study are carried into these sectors as well (Riemer, 2007).
	19.	Nomination of frame-work for formal implementation		The formal implementation was not mentioned in the feasibility study since it was out of question: A multitude of laws, regulations and directives builds the legal regulation (MLR, 2001) and the Ministry of Agriculture, Environment and Rural Areas of Schleswig-Holstein is responsible for its implementation.
	20.	Formulation of practical instructions		One result of the feasibility study were engineering detail drawings which clearly constitute practical instructions (see Hofstede, 2004).
4: Formal implementation	21.	Obtaining governmental mandate		The minister in charge of coastal defence in Schleswig-Holstein was involved. They supported the project since its function as an innovative flagship-project could politically be used by them positively (Hamann, 2007). At municipal level the two mayors in office supported the project and brought it on the local political agenda.
	22.	Integration in existing structures		Integration in legal frameworks of coastal protection of Timmendorfer Strand and Scharbeutz as well as Schleswig-Holstein. The networks of the two municipalities were used in an informal way by involving the majors with their connections.
	23.	Nomination of responsibilities		The responsibilities concerning coastal protection measures are divided between municipality, federal state and national level and clearly determined in a multitude of laws, regulations and directives (MLR, 2001).
	24.	Nomination of explicit tasks		The tasks of coastal protection are divided between municipality, federal and national state and clearly determined in a multitude of laws, regulations and directives (MLR, 2001).
	25.	Flow of information: top down and bottom up		Through an Integrated Coastal Defence Management advisory body (‘*IKM Beirat’*) at federal state level, information on ICZM reached the municipal initiative. In turn, information flow the other way round since the project has been regarded as a flagship-project whereas federal state administrations were interested in its outcomes (Hamann, 2007).

5. Practical implementation	26.	Nomination of responsibilities		The responsibility for the execution of the measures lies in hands of Timmendorfer Strand and Scharbeutz.
	27.	Nomination of explicitly tasks		The tasks are clearly defined in the feasibility study with its engineering details draws (see Hofstede, 2004).
	28.	Ensuring availability of coastal info		Coastal information on ICZM issues are not made available within the project.
	29.	Tackling main ICZM-related problems		The construction of a grounded sea wall tackled the main problems of the initiative (economic maintenance through tourism and natural scenery, coastal protection). But the measure is not completed to date (six years after the feasibility study) and the wall partly has been heightened from 80 cm to 180 cm, which affected the scenery negatively (Riemer, 2007).
6. Evaluation	30.	Conducting periodic external evaluations		The initiative was evaluated once by an internal employee using a SWOT analysis (see Hofstede, 2004)
	31.	Adaptation of ICZM to changing conditions		After the decision of executing a grounded sea wall of 80 cm, the measure was adapted to new cognition and heightened up to 180 cm partly (Riemer, 2007).

Table 11: Evaluation results of 'ICZM-Western Zeelandic-Flanders' presented according to ICZM evaluation framework and traffic light procedure, at which the green traffic light (TL) stands for 'fulfilled', the yellow for 'partly fulfilled' and the red for 'not fulfilled'

Step	Action	Description	TL	Results
1. Identification of preconditions for planning, management and funding	1.	Choosing an issue or problem to address		Problems of coastal protection, declining population and decreasing employment were recognised and defined by technical administrations (ten Braak, 2007) and subsequently discussed with participants of the coast in the frame of a "*start document*" (Knuijt et al., 2000).
	2.	Elimination of unenforceable management options		Since it was clear from beginning that coastal protection of the weak link '*West Zeeuws-Vlaanderen'* has priority (see MinVenW, 2003), only management options were discussed which could be combined with this conditions. Consequently, all other options were eliminated.
	3.	Identification of relevant stakeholders		No stakeholder analysis in written form was produced, but the regional ICZM project team (representatives of municipalities and water board) identified important stakeholders and prepared a list (Maenhout, 2007).
	4.	Discussions on focal management issues		In the frame of a sounding board (consisting of representatives stakeholders such as municipalities, water boards, beach pavilion owners, recreation entrepreneurs) discussions on a start document with management issues took place (Maenhout, 2007).
	5.	Identification on scale and extent of the issue		The scale of the investigation area was defined with the borders of Western Zeelandic-Flanders. The extent of the issue was narrowed down by focusing on precise projects in the region, such as mobility, beach pavilions and dune crossovers (see Knuijt et al., 2000).
	6.	Definition of formal implementation possibilities		The municipality aimed at implementing ICZM by setting up a plan which get adopted by the municipal council. Therewith the ICZM plan should build a framework of examination for all following coastal developments in the region (ten Braak, 2007).
	7.	Obtaining endorsement of policy		The whole ICZM initiative started together with policy makers from regional, provincial and national level (ten Braak, 2007).

	8.	Identification of sustained funding		The initial activities of ICZM such as the creation of a first plan were financed by initialization of the INTERREG project ‘S.A.I.L.’ and ‘Maya’. The funding of later execution projects were not defined in that early state (ten Braak, 2007).
2. Assessment	9.	Environmental, social and institutional issues		Almost no new assessments of environmental, social and institutional issues for the first initial ICZM plan since the existing information are meant to be sufficient (Maenhout, 2007).
	10.	Invitation for review and response		The members of the sounding board were regularly involved in new findings and cognitions (Maenhout, 2007).
	11.	Defining benefits of the ICZM initiative		The main benefits described are coastal protection and economic improvement of the recreation sector (see Knuijt et al., 2000)., which were and still are present among most of the stakeholders (ten Braak, 2007).
	12.	Definition of a shared goal/overall concept		The vision of the initiative was defined in the first ICZM document and consists of two aspects: First, the broadening of the coastal zone, and second the zoning of the coast in calm and busy segments (Knuijt et al., 2000).
3. Preparation of a plan/ strategy	13.	Conducting research targeted on CM		No research was conducted for the development of the ICZM plan.
	14.	Inclusion of marine and terrestrial coast		The plan is mainly regarding the terrestrial coast. Marine coast is only considered by means of impact on coastal security and tourism boot trips (see Knuijt et al., 2000).
	15.	Development of scenarios, cost and benefits, alternatives		The ICZM plan itself constitutes a future vision (‘*visionaire kijk*’) on the coast. But it does not consist of costs and benefits, neitheir alternatives. These issues are realized later in the practical implementation of the measures (see Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004).
	16.	Participation of stakeholders		Next to the project team the sounding board was involved to develop the ICZM plan (Maenhout, 2007).

	17.	Inclusion of co-operation possibilities		It is mentioned that the plan is part of the INTERREG IIC program 'S.A.I.L.', a consolidation of the southern Dutch, the Belgium, the northern France and the south-eastern England coast (see Knuijt et al., 2000).
	18.	Development of a multi sectoral plan/strategy		The first ICZM plan (see Knuijt et al., 2000) is just a vision and not referring to different sectors. The later developed regional specific plan 'Naturally Vital' names different sectors such as tourism, agriculture, industry and housing (see Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004)
	19.	Nomination of frame-work for formal implementation		It is said, that ICZM has to be integrated by a municipal authority in form of a legal person with an initial budget. After that it should pay for itself (Knuijt et al., 2000).
	20.	Formulation of practical instructions		For the examination of four priority projects, practical instructions are mentioned in the ICZM plan in form of a rough roadmap (Knuijt et al., 2000).
4: Formal implementation	21.	Obtaining governmental mandate		The sounding board of the ICZM initiative and the 'Region directed approach' ('*Gebieds Gerichte Aanpak*'; GGA)-commission consisted of policy makers of the municipalities, province and state who transported the issue into policy. Furthermore the national working group on coastal protection was invited and welcomed to put forward the initiative (Maenhout, 2007).
	22.	Integration in existing structures		The initiative built-up new structures, namely a new plan, a new office and new working positions (ten Braak, 2007).
	23.	Nomination of responsibilities		Coastal protection measures have priority and the responsibility of implementation lies by the Ministry of Transport, Public Works and Water Management (MinVenW). The responsibility for implementing other ICZM issues lies by the municipality Sluis. Persons in charge have to harmonize coastal developments with the regional ICZM plan (ten Braak, 2007).
	24.	Nomination of explicit tasks		Tasks of ICZM are defined for the municipal persons in charge.
	25.	Flow of information: top down and bottom up		The meetings of the sounding board and the GGA-commission provide sufficient flow of information between municipality, province and national level (ten Braak, 2007). Indicator therefore is that projects of the municipality can be found on websites of province (see Provincie Zeeland, 2007) and national level (see MinVenW, 2007).

5. Practical implementation	26.	Nomination of responsibilities		The responsibilities for execution of the projects in the region are defined in regional plan 'Naturally Vital' (see Gebiedscommissie West Zeeuwsch-Vlaanderen, 2004) and in other project plans such as 'S.A.I.L.' and 'SustAccess' (Maenhout, 2007) as well as in private financed projects such as '*Waterdunen*' (Boomert, 2007).
	27.	Nomination of explicitly tasks		The tasks for execution of the projects are clearly defined in the above mentioned plans and documents (see number 26).
	28.	Ensuring availability of coastal info		The project office of 'Naturally Vital' is manned with a full time position and therewith builds a competent contact point for all practitioners. On request, the staff of the office is available for on-the-spot support (ten Braak, 2007). Furthermore, experienced and involved entrepreneurs offer help and advice (Boomert, 2007).
	29.	Tackling main ICZM-related problems		Not all measures of the ICZM initiative are executed yet. Taking the actual projects in process into consideration, one could say that the problem of coastal protection is tackled. It is too early for giving an answer on the economic problem of the region, but huge projects such as '*Waterdunen*' (see Provincie Zeeland, 2007) are an indicator for economic success.
6. Evaluation	30.	Conducting periodic external evaluations		Evaluations conducted were internal and irregular (ten Braak, 2007).
	31.	Adaptation of ICZM to changing conditions		Constant process of adaptation to social developments was and is taken into consideration until 2018 (ten Braak, 2007).