



WG ICZM

Third Meeting

Hamburg, 24 April 2007

Agenda Item: 6

Subject: Sustainability indicators

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Attached is the tender "sustainability indicators" submitted by COWI

Proposal: **The meeting is invited to note the information**

Wadden Sea Forum

Development of Wadden Sea Region-specific Indicators

Proposal

March 2007

Wadden Sea Forum

Development of Wadden Sea Region-specific Indicators

Proposal

March 2007

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1 Introduction

COWI A/S hereby presents its proposal for the study '*Development of Wadden Sea Region-specific Indicators*' in response to the invitation to tender received from the Wadden Sea Forum Secretariat on 14 February 2007.

We propose an experienced study team

We propose an experienced study team with expertise in analysing sustainable developments, designing and implementing indicator systems, regional developments - and not least having experience from previous Wadden Sea region assignments. The team will be led by Mr Arne Kvist Rønnest, who also was team leader for the '*Development of a Wadden Sea Sustainability Strategy*' carried out for the Wadden Sea Forum Secretariat in 2004. Our experience is further illustrated in Text-box 1.1, while COWI A/S is presented in Appendix 1.

Text-box 1.1: COWI A/S competences of particular relevance for the study

- COWI has a long track record of **sustainability assignments**, and several of our consultants - representing natural science, economic and policy perspectives on sustainability - are working on sustainability issues for a broad range of clients. The issues are, e.g. nature conservation and restoration, regional development, socio-economic analyses, coastal zone management, impact assessment methods (EIA, SEA, SIA), social inclusion, and strategy making.
- For the European Commission (DG ENV), COWI has recently been awarded a **Framework contract for economic analyses of environmental policies and of sustainable development**. The contract is, among other things, related to the implementation of the revised EU strategy for sustainable development, in particular with a view towards reconciling the objectives of growth and jobs, environment and competitiveness and consumption patterns realigned with environmental protection and sustainable development. In solving this assignment, we will benefit from our past work for the European Commission in regard to impact assessments and assessment of the Community's strategy for sustainable development.
- Using indicators in practice is about designing and implementing **indicator systems**. We have recently assisted the Slovenian labour ministry, the European Investment Bank, and the Danish Agency for Enterprise and Housing in establishing indicator systems to monitor and evaluate **regional developments**. Focus has been on systems that are transparent and that easily can be used and maintained.
- Indicators are about **communication**. We have developed a unit for strategic communication (web-design, articles, and information strategies) which, for instance, are functioning as the secretariat for European Environmental Communication Networks (EECN). It is a facility through which DG Environment supports network active in the field of public information, and awareness raising about environmental issues.
- We have prepared the Sustainable Development Strategy for the **Wadden Sea Region** (2004), and have prepared an overview of Danish socio-economic data for the Wadden Sea Forum Secretariat (2003).

We propose a tested, but tailor-made method

Building on the above-described experiences implies that our proposed method for developing Wadden Sea region-specific indicators will be a tested method. In other words, the starting point for the study consists of an established foundation. However, from this starting point the indicators and the accompanying indicator system will be tailor-made to the given topic.

In Chapter 2 we provide a few comments to the Term of Reference in order to present and discuss our understanding of the needs of the Wadden Sea Forum regarding the outcome of the study. Chapter 3 presents our proposed approach and methods to selecting, maintaining and using sustainability indicators, while Chapter 4 presents the plan for the practical implementation of the study. Chapter 5 finally contains our proposed budget for the study.

Proposed output

The expected study outputs are summarised in below text-box.

Text-box 1.2: The study outputs - what this study will achieve

- **A set of specific sustainability indicators**, consistently linked to the WSF objectives, and with a clear description of data sources
- **A 3-level indicator framework**, and with an explanation of the key steps: From level 3 to level 2, and from level 2 to level 1
- **A calculation tool in Excel** - in particular for the measuring of level 3 indicators
- **A manual** which will make it easier for the WSF to undertake the maintenance and updating of the set of indicators
- Advice on the relation between **target groups** and indicator design

2 Comments to Terms of Reference

Clear objective and specific requirements

We are familiar with the purpose, organisation and achievements of the Wadden Sea Forum (WSF). Hence we fully understand the WSF's overall goal of contributing to sustainable development, and we appreciate that the WSF now strengthens its capacity to monitor the level of fulfilment of its sustainability objectives.

The Terms of Reference (ToR) provide very specific requirements to the study. Hence, we have been well guided when writing this proposal. We would anyhow like to provide a few comments to the ToR - and thereby setting the scene for the presentation of our study approach and methods. The comments are organised into the three issues:

- Consistency and comparability with national and international experience
- Many, different indicators
- Many, different users

Consistency and comparability with national and international experience

The ToR emphasises the indicators selected must be applicable in local, regional and national policies; and to avoid double work, the indicators must - to the extent possible - be derived from existing sustainability indicators - developed at the international, national and/or regional levels.

We fully agree with this selection criterion, and that is why we - as already introduced - propose a tested, but tailor-made method. Hence, hence our approach will build on experience of policy-making on the basis of sustainability indicators gained elsewhere - and in this context the specific definitions of these indicators. This will be pursued via desk research to collate the state-of-the-art way of selecting and using indicators. A benefit is also that it will easier to also draw the attentions of non-Wadden Sea politicians and others to e.g. extraordinary sustainability developments in the Wadden Sea region.

Different indicators - organised in an indicator framework

According to the ToR the number of indicators must not exceed 100. We agree with this maximum, but also that a fairly large number is needed to:

- cover all the sustainability objectives formulated in 'Breaking the Ice';
- enable the analysis of the links between social, economic, and ecological developments;

- describe the development in the whole region as well as describing the development in the different areas in the region; and
- embrace the different needs of authorities and stakeholders at national and local levels.

On the other hand, the indicator set must be clear, easy to grasp, and workable. And in that respect even 100 indicators is a large number. With an indicator set of this size, it is important to carefully consider how it can be maintained and easily updated and how the indicators can be usable and understandable for the users.

A central element in our proposed approach for handling so many, different indicators is the establishment of a 3-level hierarchy of indicators - an indicator framework - which transparent methods for providing values of the indicators at the different levels - hereunder when going from one level to another.

Many, different users

It is an achievement that the Wadden Sea Forum will continue to be a platform for a broad range of actors, representing the key sectors as well as local and regional governments.

Our approach is to identify the target groups since it affects the selection of indicators - should they: raise general public awareness?; have a scientific nature?; or focus on policy aspects? But at the same time: what is possible to select (data availability) will also determine what the set of indicators can be used for. Furthermore, our approach to communicating the indicators values will address the different types of users - and the different types of indicators.

3 Selecting, maintaining and using sustainability indicators

3.1 Selecting sustainability indicators

3.1.1 The indicator framework: an hierarchy of indicators

Three levels of sustainability measurements

We propose to adopt an indicator framework for measuring sustainability consisting of three levels - ranging from specific objective indicators, comprising observable and measurable variables (lowest level); up to the top-level sustainable development measurement, made up of a combination of quantitative data and reasoning. The proposed terminology is as follows:

- Level 1: Sustainable development measurement
- Level 2: Aggregated objective measurement
- Level 3: Specific objective indicators

Table 3.1 provides an overview of the characteristics of the three levels in the indicator framework. These characteristics are then dealt with in detail in the subsequent parts of our proposal.

Table 3.1: Characteristics of the 3 levels in the indicator framework

	Level 1	Level 2	Level 3
Terminology	Sustainable development measurement	Aggregated objective measurements	Specific objective indicators
No of indicators	1	20 (~ objectives in "Breaking the Ice")	100 (maximum)
Type of indicator/measurement	Qualitative "temperature of sustainable development"	Qualitative and quantitative	Quantitative
Units of measurement / means of presentation	Smileys Other symbols Sustainability storytelling	Smileys / scores Storytelling	Numbers
Data sources	Expert assessment	Statistics and expert assessment	Statistics

Level 1: Taking the overall 'sustainability temperature'

Sustainable development measurement tells us about the overall temperature of sustainable development in the Wadden Sea region - i.e. whether improvements, deteriorations, or little or no change are taking place. This is a measurement at a very aggregate level, and consequently not likely to be very specific. It might be the case that the different development trends are conflicting to a degree which makes it meaningless to try to capture all development trends into one measure. This would not be a problem per se as it will illustrate the very nature of the sustainability concept. We also want to emphasize that this aggregate measurement obviously will have a 'soft' qualitative nature, as it cannot be established with a high precision if the overall development is sustainable (it would require a weighting of all indicators). Also to be noted, a central element in "taking the temperature of sustainable development in the Wadden Sea region" will be to produce supporting information and storylines to a wide audience, explaining positive/negative trends.

Level 2: Measuring progress in meeting WSF objectives

Aggregated objective measurements tell us about where we are, and if we are moving towards meeting the different objectives laid down in the WSF report "Breaking the ice". There will be:

- one aggregated objective measurement for each objective and 3-7 different specific indicators per objective.

Related to the measurements, explanations should be given on the links between social, economic and ecological developments - hereunder if the objectives are supporting each other or being of conflicting nature.

Level 3: Detailed information on development trends

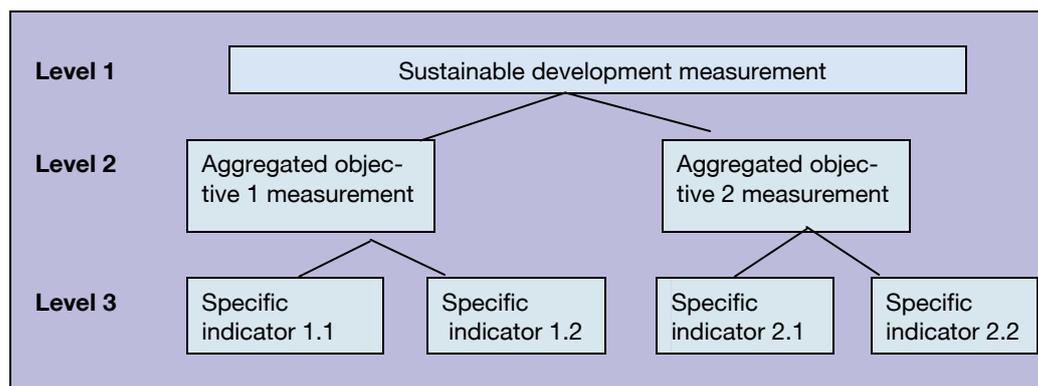
Specific objective indicators are specific measures of elements of the progress in achieving the different objectives. Hence, as said, the selection of the indicators will be guided by the WSF objectives. The units of measurement will be quantitative and based on available data compared.

We see the development of a set of specific indicators as the key part of this study, and this activity will require a majority of the Consultant's input. Please see section 3.1.2 for an elaborated discussion of selection of indicators.

Hierarchy of indicators

A sketch of the hierarchy is shown in Figure 3.1. See also Appendix 1.

Figure 3.1: Hierarchy of indicators



3.1.2 Selection of indicators

Selection of level 1 and 2 measurements

As already emphasised the bulk of the study resources will be spent on selecting and measuring level 3 indicators, and these will to a large extent determine the selection of level 2 measurements and thus also level 1. The selection of level 1 and level 2 measurements will therefore in brief be guided by the following requirements.

Linkages to specific objective indicators	Firstly and in line with the above discussion - the definitions of the level 1 and level 2 measurements must be consistent with the definitions of the specific objective indicators.
Relevant for Wadden Sea region	Obviously the indicators need to reflect the characteristics of the Wadden Sea region and the needs of the WSF. These will include that fact that the region consists of a number of fairly small geographical land areas - hereunder that it consists of a coastline and an actual sea area. Furthermore, the indicators will cover coastal regions in three different countries. Finally, in particular the level 2 aggregated objective measurements will suit the needs of the different WSF thematic groups.
Comparable with international practices	The indicators are specified in such manner that developments can be compared with experiences elsewhere. The selection of indicators will in this context be inspired by studies and documents such as those listed in Section 4.1 under Activity 1.

Selection of level 3 indicators

The ToR provides a very appropriate and complete set of requirements to the selected indicators. In the following we present our approach to securing that the different requirements are fulfilled for the level 3 indicators:

Applicability	The indicators must be applicable in local, regional and national policies. Hence, at the same time as being suitable for assessing the achievements of the WSF objectives, the indicators will be in line with indicators used elsewhere. The benefit from this is obviously that it will be easier to also draw the attentions of non-Wadden Sea politicians and others to e.g. extraordinary sustainability developments in the Wadden Sea region. Furthermore, the alignment will ensure that the WSF itself will benefit from building upon the experience of policy-making on the basis of such indicators gained elsewhere - and so double work is avoided. Our approach to pursue applicability is simply to carry out a comprehensive desk research to collate the state-of-the-art way of selecting and using indicators.
Data availability	The indicators should be supported by data that are readily available, adequately documented and regularly updated. This requirement is so to say the basis for the sustainability of the indicators system itself. We will fulfil the data availability requirement via adopting the following approach:

- A first draft set of relevant indicators will be formulated for the different WSF objectives.
- The formulated indicators will be refined in line with the availability of data - i.e. where data are readily available etc. the formulation will be retained; and where data are *not* readily available either the indicator will be eliminated from the system, or a proxy (i.e. a second best) indicator will be formulated.

Hence, we propose a process where data availability issues gradually are dealt with on the path from a gross list of indicators to a final list. A WSF workshop is proposed as a suitable element in this process.

We have at this proposal stage already some insight into the data availability issues - partly from previous studies carried within the WSF, and partly from our general experience with regional social, economic and ecological data. We are thus aware of, for example, how to use NUTS 3 level regional data in practice and we understand the breaks this year in the Danish dataset as a result of the municipal reform.

Measurability

The indicators should be quantifiable and verifiable - i.e. it must be possible categorically to decide how far we are away from reaching a given target. In other words, if we cannot be sure or it is difficult to say - then the indicator is not measurable.

Relevance

The indicators should address the issues at hand. The starting point for ensuring this is coverage of the WSF objectives presented on pages 23-24 in "Breaking the ice". The formulations of these objectives are here in general fairly brief. In the process of selecting and specifying the indicators we see - as mentioned above - a great benefit from arranging a workshop attended by the different WSF stakeholders - in order to achieve a common understanding of the objectives - hereunder an elaboration of the objective formulations, and in line with these and at the same time selecting and specifying a first version of the specific objective indicators.

This proposal is based on the assumption that objectives can be sufficiently clarified at the workshop.

Reliability

Indicators should be a trustworthy proxy for a related characteristic (i.e. the social, economic and ecological dimensions of sustainability) based on scientific credibility or previous observations. Hence, the reliability is closely related to the above data availability and relevance requirements.

Sensitivity

The indicators should be responsive to changes in the environment and human activities. In this context, the interpretation of the responsiveness will be inspired by the DPSIR framework which - primarily seen from the environmental angle - assumes cause-effect relationships between interacting components of social, economic, and environmental systems i.e.:

- **Driving forces of environmental change** (e.g. industrial production)
- **Pressures on the environment** (e.g. discharges of waste water)
- **State of the environment** (e.g. water quality in rivers and lakes)
- **Impacts on population, economy, ecosystems** (e.g. water unsuitable for drinking)
- **Response of the society** (e.g. watershed protection)

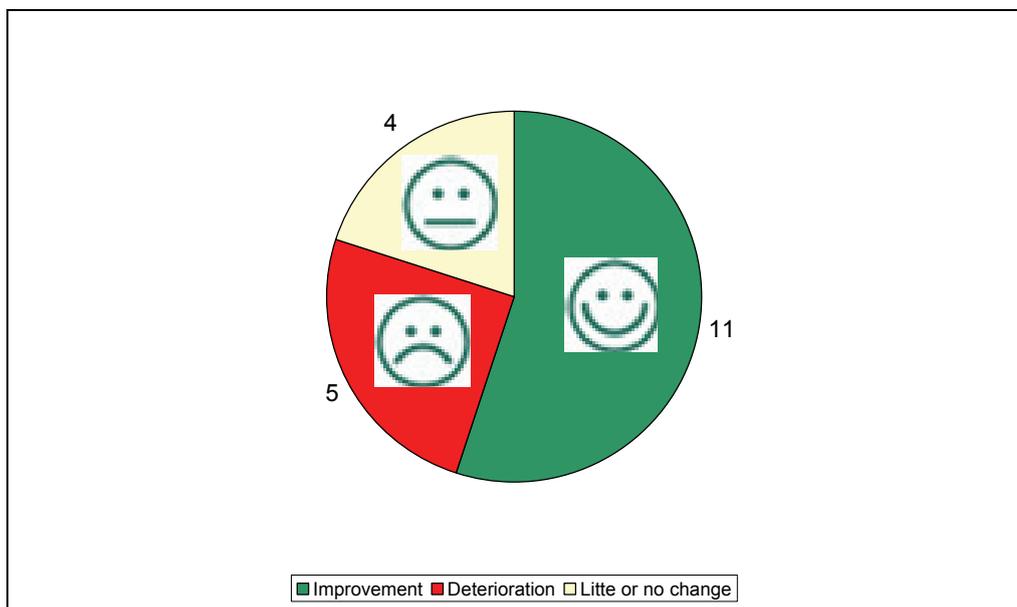
Specificity	The indicators should have a clear representation of the characteristics they are intended to reflect. If the indicator is too vaguely defined, it is also likely that the corresponding target is too vaguely defined. It will thus be difficult to get the stakeholders to accept the target and to be interested in monitoring the developments in the indicator.
Timeliness	The indicators should provide timely information, allowing time to act. In the same breath, it is central that the specific target set for the indicator should be time-bound - i.e. a specific data of target achievement.
Trackability	The indicators should be based on data that is collected at regular time intervals using consistent methodology over a long period of time. This requirement is an amplification of the above data availability requirement - and it must again be emphasised that the Danish municipal reform implies a break in the geographical delimitation of the immediate availability of region-specific Danish data.
Understandability	Finally, the indicators should be easily understood by the audience, including those who are not experts. While this understandability requirement is important for the level 3 indicators, it is particularly important for level 1 and 2. This is discussed in more details later on in this proposal.

3.1.3 Measuring indicators

Measuring level 1 and 2

Illustration of measurements	As mentioned above the establishment of the sustainable development measurement on the basis of the aggregated objective indicators will be done in pursuance of transparency. An <i>illustration</i> of our idea to such sustainable development measure is provided in Figure 3.2. Here we assume that we have established 20 aggregated objective measurements; 11 of these indicate an improvement in the sustainability situation in the Wadden Sea region - e.g. using the colour green and/or a happy smiley, while 5 indicate a deteriorating situation.
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Figure 3.2: Sustainable development in the Wadden Sea region (illustration of idea)



The measure will be accompanied with a storyline of the sustainability situation in the Wadden Sea region (see Section 3.3 for further on this).

Symbols and scorings

The approach to level 2 measurements is to establish scores or smileys on the basis of the quantitative specific objective indicators (level 3 indicators). The scoring system can first be established when we are a step further developing the level 3 indicators. Table 3.2 illustrates our thinking through a table we produced for the European Investment Bank (EIB), while evaluating the impacts of cross-border TEN projects financed by the EIB.

Table 3.2: Illustrating a scoring of regional impacts of infrastructure investment

Projects	1	2	3	4	5	6	7	8	9	10	11
<i>Impacts within NUTS 3 regions (and the cross-border region formed by the two NUTS regions – for projects 5-11)</i>											
Employment	S	S	S	S	L	M	L	L	M	S	M
Accessibility	S	S	S	M	S	S	L	M	S	S	L
Efficiency and output	S	S	M	M	S	S	M	M	L	S	L
Social inclusion	M	M	M	M	M	S	L	L	L	M	L
<i>Broader impacts beyond the NUTS 3 regions</i>											
Broader impacts	M	M	M	M	L	M	L	L	S	S	M
<i>Total regional impacts</i>											
Overall rating	S	S	S	M	S	S	L	M	M	S	L

S – Significant; M – Medium, L – Low

Source: http://www.eib.org/Attachments/ev/ev_cross_border_ten_en.pdf - page 29.

Measuring level 3 indicators

Last but not least!

Although our approach to measuring level 3 indicators is placed last in the section, it is not the least important - on the contrary! Measuring level 3 indicators will comprise the bulk of the study efforts.

Provision of a calculation tool in Excel

We propose to develop and provide a calculation tool implemented in Excel as part of the outcome of the study. By this we mean a tool which set up to comprise the up to 100 specific objective indicators - i.e. indicator sheets for each of the indicators. The below mock-up of such indicator sheet shows that we envisage that apart from containing the primary data values and the indicator values calculated via formulae, each sheet will also comprise the actual indicator documentation - i.e. much of the technical documentation will be integrated into the calculation tool.

Another observation is that all indicators will have a geographical level suitable for the Wadden Sea region. However, in cases where data are not immediately available at the detailed level - higher level data will be used as representatives or proxies. In other words, the budget we have proposed for the study in Chapter 5 does not allow for the collection of data that are not immediately available. Such approach would in any case limit the maintainability of the indicator system.

	A	B	C	D	E	F	G	H	I
1	Code and title:								
2	Indicator 4.1: Enterprise births								
3	Definition:								
4	Gross birth rate of new enterprises as a percentage of total stock of active enterprises								
5	Formula:								
6	Indicator 4.1 = new enterprises/stock of enterprises								
7	<i>(with an indication of possible geographical and sectoral dimensions)</i>								
8	Rationale:								
9	<i>Here we explain the contribution to sustainable development from the given indicator, hereunder</i>								
10	<i>how it can be used by the WSF thematic groups, for example.</i>								
11	Primary data sources:								
12	<i>Here we provide precise specifications of where the primary data comes from - in Denmark,</i>								
13	<i>Germany and the Netherlands, respectively, and their periodicity and dates of release</i>								
14	Primary data values:								
15	New enterprises		2006	2007	2008				
16	DK1		34	44	45				
17	DK2		12	14	5				
18	...								
19	GE1		3	3	3				
20	...								
21	NL1		3	3	3				
22	...								
23	Stock of enterprises								
24	...								
25	Indicator values:								
26	DK 1								
27	...								
28	Problems (if any):								
29	<i>An account of problems involved in the calculation of the indicator - affecting the quality and use</i>								
30	<i>of the indicator.</i>								
31									

A final observation - which is not contained in the above illustration - is that we as far as possible also will use the Excel tool to help establishing the level 1 and 2 measurements - e.g. where scores for level 2 measurements assigned via pre-

cise developments in certain level 3 indicators, such values will automatically be provided by the tool.

Resources and timing of up-dating

3.2 Maintaining indicators

The process of selecting, maintaining and using indicators must ideally be seen as one - as the selection of indicators should be guided by a clear perception on target groups and resources available for the maintenance and regularly up-dating of indicators.

To stimulate clarify on this issue we suggest:

- To discuss the maintenance aspect at an early stage with the WSF Secretariat (at the workshop, activity 2)
- To produce a manual at how to update the indicators, thereby providing a solid link between the selection and preparation of the indicator set to the maintenance.

Communication of changes in the sustainable development

3.3 Using indicators

In the course of developing the methodology for the selection of indicators, we have noted that it is important to clarify, also, how the indicators will be used. Thus, besides presenting the set of indicators and the indicator framework, we suggest that the final report also briefly outline different models for the Wadden Sea Forum to communicate the status and evolution of sustainable development based on the selected package of indicators. To summarise, relevant issues are:

- **Target groups.** Different target groups will have different needs, thus the communication of the status and evolution of sustainable development should be done at different levels of aggregation. These levels should range from easy and quick overviews (the general public) over detailed and transparent accounts for the development of each indicator to access to the raw data (the scientific community).
- **Presentation techniques - use of symbols.** As said above, the level 2 and level 1 indicators can be presented on the basis of symbols - e.g. smileys, flashlights. These symbols indicate the overall direction while not pretending a precise measurement of the direction. Also such symbols are appropriate as assessments on level 2, and of course in particular at level 1 level, are aggregates - the sum of the relevant level 3 indicators.
- **Explanations and storytelling.** We suggest including story-telling as a complement to the 'hard facts' of the indicators. Story-telling is the delivery of stories to present nuances, anecdotal evidence, clarify a point, support a point of view and crystallize ideas. It is a method to connect data and reality and can help bridge the gap between data and knowledge.

4 Implementation of project

4.1 Activities

Work method

We agree with the ToR that the development and selection of indicators should mainly be done as a literature and desk study. However, we find it important to involve the key stakeholders at an early stage and are proposing a workshop (activity 2, see below).

We appreciate the possibility to work with the WSF Secretariat (literature review, discussion partner, etc.) and are convinced that the mutual use of the Secretariat's knowledge and our experience will contribute to a set of indicators reflecting the WSF priorities.

Overview of activities

There will be six main activities cf. the overview table below.

Activity		Output
1	Review of existing indicator systems and the first drafting of a set of indicators	Working note. Systematic overview of relevant examples of sustainability indicators and a list of lessons learned
2	Workshop with relevant Wadden Sea Forum committee	Minutes of meeting. Clearer understanding of the expectations
3	Analysis and preparation of indicators	Draft report. Set of Wadden Sea Region sustainability indicators fulfilling requirements as described in the ToR
4	Prepare an easy-to-use guide for updating of indicators	Manual for updating indicators
5	Consultation with WSF Working Group ICZM on the draft report	Draft final report
6	Reporting	Final report

Activity 1

Review of existing indicator systems and lessons learned for the Wadden Sea region. Activity 1 will provide a systematic overview of the most relevant sets of sustainability indicators, such as:

- EUROSTAT Sustainable Development Indicators, reflecting the EU Sustainable Development Strategy and Lisbon strategy (2001, 2006).

- The European Environmental Agency indicators (quite detailed indicators for several sectors).
- National sustainability indicators - Denmark (101 national indicators), The Netherlands, Germany (21 key indicators).
- Also the UK experiences will be presented, as its sustainability indicators and particularly its follow-up system are advanced and because the indicator system is regionalised (regional versions for 44 out of 68 national sustainable indicators have been prepared).
- The Swedish system of sustainability indicators is also advanced and will be reviewed.

The lessons learned of the review will be listed, thus forming a basis for the subsequent dialogue with the WSF.

- Activity 2 **Workshop with relevant Wadden Sea Forum committee members/Secretariat.** The selection of indicators has a clear subjective element: it is a *choice*. In the future this particular choice has an impact upon what will be observed/debated - and what development trends will be left unobserved. It will thus add legitimacy as well as quality to the selection of indicators if we at an early stage have the opportunity to meet with key persons of the Wadden Sea Forum and the WSF Secretariat.
- Activity 3 **Analysis and preparation of indicators.** On the basis of the overview of relevant experiences and the feedback from the Wadden Sea Forum, the indicators will be developed, following the requirements of the ToR and the ideas as presented in chapter 2.
- Activity 4 **Manual for up-dating.** It is essential that the indicator set can be updated a regular intervals, say yearly. We will prepare a brief manual on the up-dating process outlining the main steps.
- Activity 5 **Consultation with WSF Working Group ICZM on the draft final report.** The key findings and recommendations will be reported in the draft final report to be discussed with WSF Working Group ICZM.
- Activity 6 **Final report.** Following feedback form WSF Working Group ICZM, the final report will be delivered at the latest 2 month after conclusion of the contract.

Text-box 4.1: The study outputs - what this study will achieve

- **A set of specific sustainability indicators**, consistently linked to the WSF objectives, and with a clear description of data sources
- **A 3-level indicator framework**, and with an explanation of the key steps: From level 3 to level 2, and from level 2 to level 1
- **A calculation tool in Excel** - in particular for the measuring of level 3 indicators
- **A manual** which will make it easier for the WSF to undertake the maintenance and updating of the set of indicators
- Advice on the relation between **target groups** and indicator design

Communicating the observations to a broader audience!

4.2 Option on communication, web-design and GIS

To maximise the utility of the development of the indicators, it is advisable that the Wadden Sea Forum considers essential questions, e.g. what are appropriate media to be used for the indicator-based communication:

- homepage?
- regular E-newsletters?
- newspapers?
- GIS-based maps?
- An annual Wadden Sea sustainable development status reports?

In continuation of this assignment, COWI A/S gladly provides relevant services such as an web element providing the WSF-homepage visitors with an immediate sustainability overview of the region. A website solution gives the opportunity to "click" through the different levels of detail. Furthermore, different attributes can be added to such a website e.g a GIS solution.

We have not include these additional services into the budget which concern the tasks outlined specifically in the ToR.

4.3 Work plan

We confirm to undertake the project within the time-frame set by the ToR, namely that the project must be finished within 2 months after conclusion of the contract. The time schedule of the study is outlined below.

Time schedule of the study

Activities Weeks (after signature)	1	2	3	4	5	6	7	8
1. Review - list of lessons learned								
2. Workshop with WSF-members								
3. Analysing / preparation of indicators								
4. Guide for updating of indicators								
5. Consultation with WSF Working Group ICZM								
6. Final report								
Meetings and deliverables								
Kick-off (phone) meeting with secretariat	X							
Final meeting with secretariat							X	
Final report								X

4.4 COWI team

We propose the following core team of four people including a Sustainable Development Expert, An Indicator Expert, An Ecosystem Expert and a researcher. The core team will be supported by a pool of experts as necessary

4.4.1 Core team

Team Leader and sustainable development expert

As Team Leader we propose Mr. Arne Kvist Rønnest.

Mr. Arne Kvist Rønnest, MSc Political Science, Chief Project Manager. He is an experienced project manager and evaluator and has implemented several projects on behalf of ministries, donor organisations and international organisations. Of particular relevance for this project:

- Project manager on projects relating to Sustainable Development, regional development and related socio-economic analyses:
 - Development of a new Roskilde-Lejre National Park - facilitating local governments through an intense process of developing a National Park concept to the Danish Ministry of Environment (2005)
 - Regional-economic study of scenarios for development of the agricultural sector in the Viborg County (2005)
 - Integration of sustainability into EU policy making (as institutional expert)
 - Development of a Wadden Sea Sustainability Strategy, for the Wadden Sea Forum Secretariat (2004)
- Project Manager for studies and evaluations for the EU-Commission and the European Investment Bank:
 - Ex-post evaluation of all completed actions funded under the Sustainable Mobility Programme during 1997-2004 (2006)
 - Ex-post evaluation of the Sustainable Mobility and Intermocdality groups of projects funded under the EU FP5 (on-going)
 - Mid-term evaluation of the GALILEO project (2006)
 - Evaluation of Cross-border TEN-T and TEN-E projects - Impacts of large infrastructure projects on regional development. (2006)

Indicator Expert

Peter G. Madsen, MA Economics, 1987, has extensive experience in developing and implementing indicator systems - with a focus on sustainability issues and the regional dimension. He was team leader for assistance to the Slovenian Ministry of Labour, Family and Social Affairs in developing an EU comparable labour market indicators system supporting a smooth implementation of the National Action Plan (NAP) for employment. He was project manager for the development of a system of socio-economic indicators for fishery-dependent areas in the EU for the EC fisheries directorate, who he also assisted in design-

ing indicators for environmental integration of the Common Fisheries Policy. Recently, he assisted the European Investment Bank in developing regional economic and social cohesion indicators for assessing the impact of large infrastructure investments; and he helped the Danish Agency for Enterprise and Housing in designing an indicator system as part of an ex-ante evaluation of the Danish programmes for EBRD and ESF for the period 2007-2013.

The regional dimension of indicators has been central in many assignments. Mr Madsen was project manager when developing an inventory and an evaluation of socio-economic data for the Danish Wadden Sea region for the WSF in 2003 in its process of defining sustainable development scenarios and strategies. He was project manager for a number of studies for Eurostat and EC fisheries directorate evaluating the possibilities for harmonisation regional employment data within fisheries at the EU level; and he has developed a methodology to assess local employment impacts from changes in catches and catch composition. Databases and models are constructed for Peniche in Portugal, Humber-side in the UK and Bornholm in Denmark.

Ecosystem Expert

Dr. Steffen Brøgger-Jensen, Ph.D. Biology, has almost 20 years of experience in integrated ecological and biodiversity management. He has obtained a momentous expertise in protected areas management and biodiversity conservation due to a long array of assignments within national parks, Man & Biosphere Reserves, Ramsar sites, Natura 2000 sites and other types of protected areas. Dr. Brøgger-Jensen has a substantial experience in nature protection and natural resource management, incl. multiple-use management, habitat restoration, conservation management, spatial planning, public involvement and capacity-building in natural resource and environmental management. He has developed and implemented biodiversity and environmental monitoring programmes, coordinated environmental data management and data analysis, as well as reporting and dissemination within governmental and public institutions.

Further, through a long experience of consultancy on EIA and Environmental Management Planning, he has a sound understanding of all phases of the EIA process, including environmental screening and scoping, monitoring & evaluation, identification and use of environmental indicators, data management, reporting and public consultations. He has a profound experience in impact assessments of resource use (incl. water resources, forestry and agriculture) on the natural environment, and he is familiar with the relations between regional development planning and management and monitoring of natural resource use.

Researcher

Mr. Carsten Ellegaard, MSc, Political Science, has a strong academic background in political science, including public administration, decision-making theory, institutional analysis and organisational development and management. Mr. Ellegaard has significant experience in methodological approaches from quantitative to qualitative research combined with a logical sense for data collection and systematization.

Pool of experts

The core team will be able to draw on COWI's huge resource base consisting of natural and social scientists, with expertise within all aspects of sustainable de-

velopment - from resource economists over labour market experts to coastal zone management specialists.

Further more we have a well-reputed communication department as well as one of Denmark's leading GIS departments.

Quality Assurance

Quality assurance will be carried out in accordance with COWI's quality management system by Ms. Malene Sand Jespersen. Malene Sand Jespersen has more than 15 years of consultancy experience. She is currently holding the position as head of department for Environmental Economics and Social Affairs. Her professional expertise covers sustainability indicators, sustainability assessment methods and evaluations, policy bench marking, environmental regulation, conduct of cost benefit evaluations and cost efficiency analyses as well as extended impact assessments and preparation and implementation of international environmental agreements. She was the project manager for the 'Evaluation of Approaches to Integrating Sustainability into EU Community Policies', for the European Commission (2004).

Responsibility of team members

All of the team members will be responsible for different aspects and phases of the project, of course subject to the overall responsibility of the COWI project manager. The participation by each team member in each of the tasks (including project management and supervision) appears from the following table:

	Arne Kvist Rønne	Peter G. Madsen	Steffen Brøgger	Carsten Ellegaard	Pool of experts	Malene Sand
Act 1 - review	°	•		°		
Act 2 - workshop	•	•				
Act 3 - drafting	•	°	°	°	°	
Act 4 - manual	°	•	°	°		
Act 5 - consultation	•	•				
Act 6 - reporting	•	°	°	°	°	
Management	•	°				
QA						•

• = main responsible, ° = person providing key input

DEVELOPMENT OF WADDEN SEA REGION-SPECIFIC SUSTAINABILITY INDICATORS

LEVEL 1: SUSTAINABLE DEVELOPMENT MEASUREMENT

- NUMBER OF MEASUREMENTS OF THIS LEVEL: 1
- PRESENTATION:
 - SYMBOLS (😊 😐 😞)
 - EXPLANATION
 - STORY LINE

LEVEL 2: AGGREGATE OBJECTIVE MEASUREMENT

- NUMBER OF MEASUREMENTS OF THIS LEVEL: APPROXIMATELY 20
- BASED ON "BREAKING THE ICE" OBJECTIVES
- PRESENTATION
 - SYMBOLS (😊 😐 😞)
 - EXPLANATION

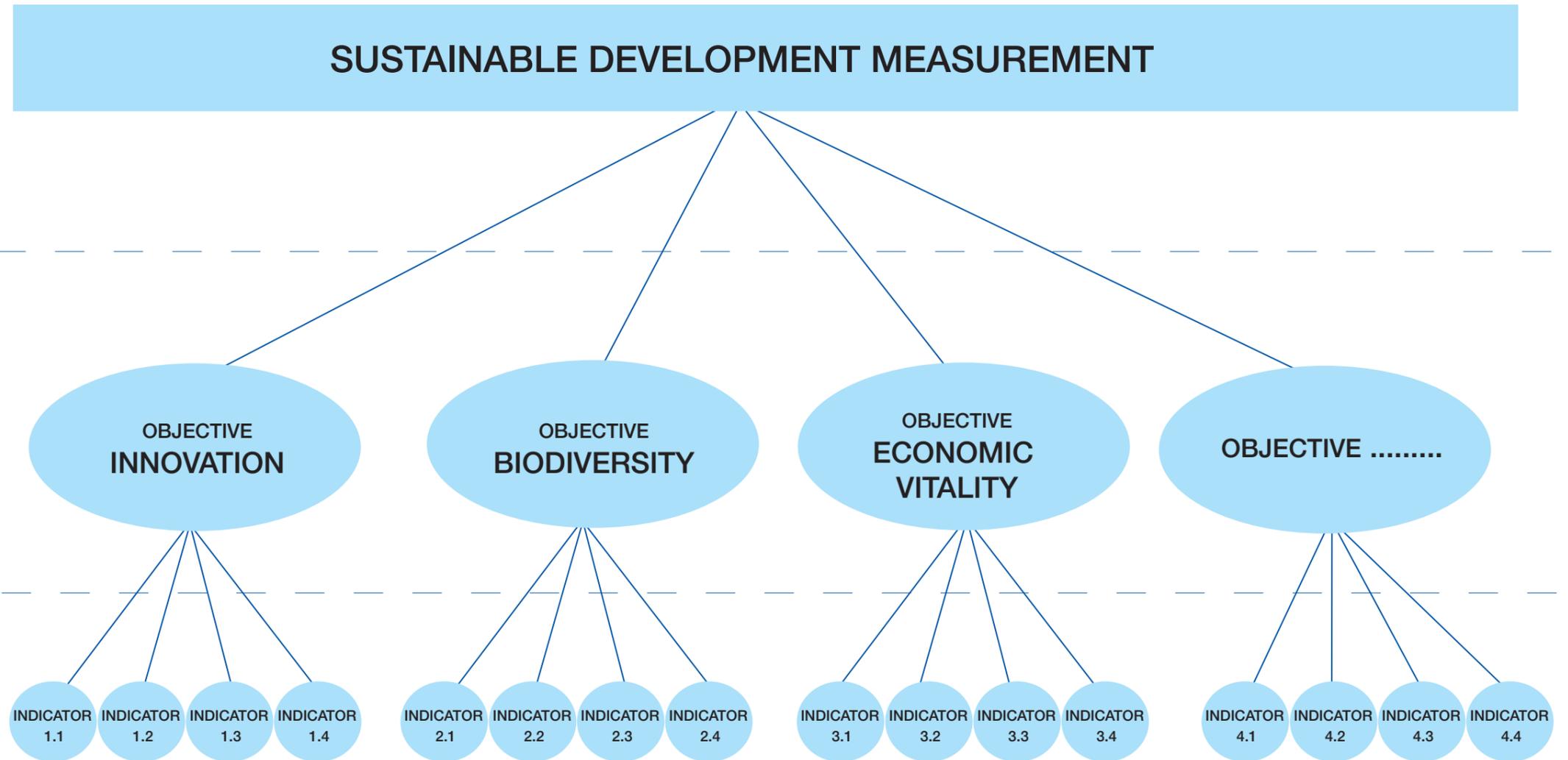
LEVEL 3: SPECIFIC AGGREGATE INDICATORS

- NUMBER OF INDICATORS OF THIS LEVEL: MAX. 100
- PRESENTATION
 - STATISTICS
 - LINKED WITH OBJECTIVES
 - CONSISTENT WITH INTERNATIONAL EXPERIENCE
 - RELEVANT FOR WADDEN SEA REGION

MOST OF THE WORK DEVOTED TO THIS LEVEL

RESULTS OF THE STUDY:

- ✓ A SET OF INDICATORS
- ✓ A MANUAL FOR UPDATING
- ✓ AN INDICATORS FRAMEWORK
 - FROM INDICATORS TO SUSTAINABILITY MEASUREMENT
- ✓ ADVICE ON KEY QUESTIONS
 - TARGET GROUP
 - UPDATING
- ✓ CALCULATION TOOL



PROCESS OF DEVELOPING WADDEN SEA SUSTAINABILITY INDICATORS



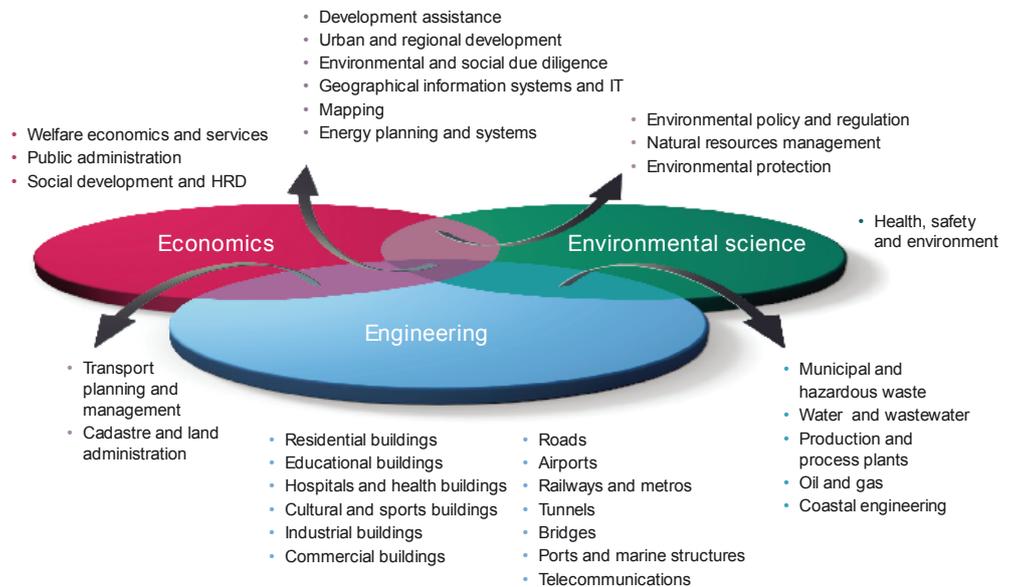
Appendix 2 Presentation of consultant

Introduction

COWI A/S is forwarding this proposal on the basis of competences in sustainable development and related fields such as nature conservation and restoration, regional development, socio-economic analyses, coastal zone management, impact assessment methods (EIA, SEA, XIA), social inclusion, and strategy making.

The three 'E's

COWI A/S located in Denmark is the parent company in the COWI Group. COWI is a Danish private limited company with the COWI Foundation as the majority shareholder. COWI has rendered independent multidisciplinary consulting services to public and private clients throughout the world for nearly 75 years. The core business of the company lies within the spheres of our three service lines ranging from classical engineering through environmental science to modern economic analyses.



COWI has carried out nearly 50,000 projects in over 175 countries, mainly in Europe, Asia, the Middle East, Africa and the Americas. The company is currently engaged in some 5,300 projects within a wide range of disciplines.

With a turnover of approximately EUR 250 million COWI continues its position as one of the leading consulting companies in Northern Europe. In the same period, the approximate COWI Group turnover was EUR 350 million.

Multi-disciplinary

Reflecting the multidisciplinary services provided by COWI, our firm is organised in 9 professional business units in Denmark/Norway and a number of subsidiaries and offices throughout the rest of the world:

Business Unit	Main Fields of Expertise
Economics and Management	Environmental Economy and Legislation Regional and Transport Economy Public administration and law
Development Planning	Water and Sanitation in Developing Countries Agriculture, Natural Resources and Rural Infrastructure Institutional and Human Development
Water and Environment	Environment and Nature Health, Safety and Environment Soil and Groundwater Pollution Water Supply and Wastewater in Denmark and Europe
Geographical Information and IT	Geographic Information Systems Information Technology and Management Surveying
Railways, Roads and Airports	Roads Airports Railways and Metro
Bridges, Tunnels and Marine Engineering	Bridges Major Bridges Tunnels Marine and Foundation Engineering Operation Management and Systems Special Services
Building and Operation	Planning and Operation Client Consultancy and Building Technology Installations and Interior Climate Building IT and Electricity Industrial Maintenance and Operational Optimisation
Industry and Energy	Industry Planning Industrial Plants Oil and Gas Industry Energy Solid Waste and Recycling
COWI Norway	Multi service provider

For the purpose of the project in question, COWI will draw in particular on the experience of

- *the Economics & Management Business Unit, and*
- *Water and Environment Business Unit*

Geographical Coverage of the COWI Group

COWI's Head Office is located in Copenhagen and is supplemented by 11 regional offices throughout Denmark. Further, the COWI Group maintains 30 branch offices and affiliated offices in Asia, Europe, the Middle East, Africa and the Americas. COWI has been active in Europe for many years, and has an established office in Brussels.