GRACE grant no 679266

SNEBA course
Framework report

D5.10

WP5: Strategic Net Environmental Benefit Analysis (SNEBA)

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2.0	final	30.11.2018		Steering group 30.11.2018

Contents

Executive Summary

The aim of the SNEBA course is that the students obtain the necessary knowledge and skills to be able to perform a strategic net environmental benefit analysis (SNEBA) for a selected assessment area.

The developed course framework is based on the Strategic Net Environmental Benefit Analysis (SNEBA) tool (see Deliverable 5.8, D5.8), which is the main objective of the WP5. The SNEBA tool is meant to aid in decision-making, designing an appropriate and rapid oil spill response strategy combining the right mix of interventions (e.g., mechanical recovery, in situ burning, chemical dispersants, and/or natural attenuation (Do nothing)) based on relevant scenarios.

The course will be developed and based on five steps in the SNEBA tool; collection of basic data and information, assessments, scoring systems, analyses through decision trees and interpretation of SNEBA results. Thus, the e-based distance learning course will mimic the SNEBA structure, process and steps, by providing detailed background information about the SNEBA concept, instructions on data processing and calculations, scoring systems and how to go through the decision trees as well as interpretation and dissemination of results. The course will be developed and offered by Aarhus University.

The course will consist of video lectures, exercises, and a final report on the SNEBA process and results for a selected assessment area.

The target group for the SNEBA course will be Ph.D. students, but could also be given as life-long learning course for authorities and organisations with oil spill response as focus topic.

1 Introduction

The developed course framework is based on the Strategic Net Environmental Benefit Analysis (SNEBA) tool (see Deliverable 5.8, D5.8), which is the main objective of the WP5. The SNEBA tool is meant to aid in decision-making, designing an appropriate and rapid oil spill response strategy combining the right mix of interventions (e.g., mechanical recovery, in situ burning, chemical dispersants, and/or natural attenuation (Do nothing)) based on relevant scenarios.

As a SNEBA for an assessment area may be a rather complex process, we have developed the framework for an e-based distance learning course. From this course it will be possible to understand and perform the process and steps of the SNEBA tool for a selected assessment area.

Hence, the aim of the course is to provide students with knowledge and skills to use the SNEBA tool, and obtain a SNEBA result for a selected assessment area. Note that the SNEBA tool is developed by Aarhus University and the final version will be launched in March 2019.

The process of the SNEBA consists of five steps:

1) **Basic data and information**
   Collection and compilation of data and information as basis for the analysis
2) **Assessment**
   Processing of data and information for assessments
3) **Scores for the SNEBA analysis**
   Calculation of scores for analysis decision trees
4) **Analysis through decision trees**
   By decision trees for each oil spill response methods and for each of the four seasons (spring, summer, autumn and winter
5) **Interpretation and dissemination of analyses results**
   The outcome from the decision trees are discussed

The course will be developed and based on these five steps. Thus, the e-based distance learning course will mimic the SNEBA structure, process and steps, by providing detailed background information about the SNEBA concept, instructions on data processing and calculations, scoring systems and how to go through the decision trees as well as interpretation and dissemination of results.

The course will consist of video lectures, exercises, and a final report on the SNEBA process and results for a selected assessment area.

The target group for the SNEBA course will be Ph.D. students, but could also be given as life-long learning course for authorities and organisations with oil spill response as focus topic.

For the full development of the course, separate funding of app. 1 mill DKK will be applied for at, e.g., Nordplus, Nordic Council of Ministries, preferably with the Nordic partners of GRACE.

2 SNEBA course description

2.1 SNEBA course information

Title:	SNEBA for oil spill response planning
Language of instruction:	English
Points (ECTS):	Tentatively 5
Course type:	Ph.D.
	Technological specialization course
	General competence course
Schedule:	By demand
Location:	e-based distance learning
Scope and form:	Video lectures, exercises, report writing and evaluation
Duration of course:	3 weeks full time
Type of assessment:	Exercises
	Report; chapters and final
	Peer review by fellow students
Evaluation:	Pass / fail of final report
Recommended prerequisites:	We recommend background knowledge in marine biology or relevant engineer education
Participant's restrictions:	No restrictions
Responsible:	Aarhus University, AU

2.2 General SNEBA course objectives

To obtain the necessary knowledge and skills to be able to perform a strategic net environmental benefit analysis (SNEBA) for a selected assessment area.

2.3 Learning objectives of the SNEBA course

A student who has met the objectives of the course will be able to:

Define and characterize assessment area, oil types and oil spill scenarios.

Obtain oil spill modelling simulation results.

Select and identify species / organism groups of concern in the assessment area.

Understand oil spill response methods and their potential environmental side effects.

Perform SNEBA calculations and use SNEBA score systems.

Obtain SNEBA results by use of decision trees.

Evaluate environmental advantages and disadvantages of an oil spill response method for a spatial compartment (sea surface, seawater, seabed, shoreline) for each season.

Describe and present SNEBA results with regard to assessing if an oil spill response method can be considered an option as an oil spill response measure in the assessment area for the specific season in order to obtain an overall environmental benefit.

Recommend which oil spill response methods to include in an oil spill response contingency plan on national or international level for an assessment area.

2.4 SNEBA course content

2.4.1 Core elements:

- Oil spill scenarios and modelling

- Environmental impacts from oil spill

- Oil spill response methods and environmental side effect

- Optimization of oil spill response

- Oil spill response preparedness

2.4.2 Topics

Selection, definition and characterization of assessment area

Selection of oil types, sites etc. for oil spill scenarios and obtaining oil spill modelling simulation results

Selection and identification of species / organism groups of concern in the spatial compartments, sea surface, seawater, seabed, shoreline, for each season in the assessment area.

Oil spill response methods and their potential environmental side effects.

Introduction to SNEBA tool, calculations, score systems and decision trees.

Interpretation and dissemination of the SNEBA for recommendations of which oil spill response methods to include in an oil spill response contingency plan on activity, national or international level for an assessment area.

3 SNEBA course structure

The SNEBA course structure is shown in Table 1.

The structure and process of the SNEBA is based on a number of descriptive boxes for gathering data, calculations and scoring. The data and scores are eventual used in the decision trees for each of the oil spill response methods.

Table 1. SNEBA course structure with lectures, exercises and deliverables.

Video Lectures	Exercises	Handins
Introduction		
1) Basic data and information		
Oil spill response methods		
Assessment area		
Oil spill scenarios and models		
Selection of species of concern		
Ecotoxicology		
	Oil spill modelling simulations	
		Report chapter 1
2) Assessments		
Criteria for calculations of oil polluted areas and volume		
Criteria for calculations of oil polluted areas and volume fractions		
	Calculations of oil polluted areas and volumes and their fractions	
		Report chapter 2
3) Scores for SNEBA		
Score system for summed spatial compartment values and Net Environmental Benefit		
	Scoring of Σss, Σsw, Σsb, Σsl and NEB	
Score system for soot pollution (SP) from in situ burning and damage reduction for mechanical recovery		
	SP scoring and calculation of DaR	
Score system for oil pollution of sea surface, seawater, seabed and shoreline		
	Scoring of fSSA, fSWV, fSBA, fSLL	
		Report chapter 3
4) SNEBA		
Decision trees for dispersants, in situ burning, mechanical recovery and doing nothing		
	SNEBA through decision trees	
		Report chapter 4
5) interpretation and dissimination of SNEBA results		

		Final report