

imaros

ACRONYM	IMAROS
TITLE	Improving response capacities and understanding the environmental impacts of new generation low sulphur MAR ine fuel Oil Spills
PROJECT NUMBER	874387
CALL	UCPM-2019-PP-AG
COORDINATOR	Norwegian Coastal Administration
VERSION	1.0
LAST REVISION	28.02.2020

Project plan



Co-funded by the European Union

Table of contents

Introduction.....	3
Objectives and scope of the project.....	4
Description of concept	6
Project organisation	8
Project partners.....	8
Organisation.....	9
Core Project Team (CPT).....	11
Description of work	13
Work packages	13
Work package 1 Project management	13
Work package 2 Compilation of knowledge	18
Work package 3 Chemical characterisation	21
Work package 4 Response options	26
Milestones.....	30
Deliverables	31
Timetable	32
Budget.....	34
Risk management strategy	36
Communication and visibility.....	37

Introduction

Successful oil spill response after ship incidents will reduce the impacts on the marine environment and socio economic impacts on affected coastal communities. Present changes in IMO regulations to reduce air emissions from ships have resulted in a "new generation" of fuel oils. These new fuel types may be challenging during accidental oil spills and their behaviour after a spill are not well known.

Laboratory and basin testing so far revealed a substantial diversity of the fuel oils with regard to physical and chemical properties, as well as toxicity. Practical experience is still scarce, but the experience from two ship incidents underlines the relevance for responders. A ship incident involving this new generation of oil, may result in severe impacts on the marine and coastal environment with subsequent challenges for the responders, since it might be difficult to recover the oil with conventional oil spill response equipment and methods.

This project aims to bring together knowledge and experiences from different countries in the UCPM. The project will identify the most relevant products of the new generation of fuel oils used by ships in Europe. These oils will be analysed to identify different characteristics. Furthermore, the suitability of different response technologies and methods for spills of these new products will be identified through practical tests of equipment.

The overall aim is to develop recommendations for oil spill response involving the new generation of fuel oils. This includes capacities and methods for response at sea as well as on shorelines. This will enable the participating states of the UCPM to invest in the most proper equipment and gain knowledge about the best possible methods within oil spill response when it comes to this new generation of oil. An effective at sea response will also reduce the amount of oil, which will reach the shorelines. The results may contribute to the development of more environmentally friendly bunker fuels in the future.

Objectives and scope of the project

The objectives and outcomes based on the call for proposals are listed in Table 1.

Table 1 Objectives and targeted outcomes of the project

Objectives and outcomes	
Topic	Preparedness
General objective (same as in the call document):	<i>Strengthening preparedness for responding to multi-sector emergencies, including health, CBRN, environment and marine pollution in Europe and its Neighbourhoods</i>
Specific objective (from the call document):	<i>1. Strengthening capacities for emergency response</i>
Outcomes	<p>Outcome 1.3. Options for adapting existing response capacities for land / maritime emergencies are devised</p> <p>Outcome 1.4. A knowledge base on response options to new environmental risks is available</p>

The specific objective the project will contribute to achieve is “*Strengthening capacities for emergency response.*” In general, the project will acquire knowledge of new fuel products and their inherent risks. This knowledge will prepare the ground for evidence-based improvement of existing capacities, and point out challenges to encourage development of new technology.

The project will focus on the outcomes 1.3 and 1.4:

Outcome 1.3. Options for adapting existing response capacities for land / maritime emergencies are devised

The results of work package 3 (WP 3) will give a better understanding of the physical behaviour of oil spills of the new generation fuel oils. Understanding how an oil spill behaves at sea and shoreline under different conditions is crucial to choose the most adequate response technique and the right equipment. Furthermore, it is a key factor to understand operational constraints.

In WP 4 different techniques and equipment will be tested under conditions as realistic as possible, within a controlled experimental set-up in the test facilities. This will result in better knowledge of possibilities and constraints to oil recovery operations on the new fuel types, which is important to limit environmental impacts and to prevent oil spills from reaching the shoreline. The project will result in recommendations on response techniques. Furthermore, it may give advice on modifications to existing oil spill response capacities, and in-potential to development of concepts, techniques and equipment. This knowledge can be used by the participating states of the UCPM to adjust their capacities and make better-informed decisions.

Outcome 1.4. A knowledge base on response options to new environmental risks is available

The results from WP 2 will provide a better understanding of the current situation, in terms of the overall risk picture regarding the new generation fuel oils. Rapid changes are taking place in the marine fuel market, as ship owners prepare to comply with the new IMO regulations (MARPOL Annex VI) that enters into force on 1.1.2020. (Global Sulphur Cap 2020). We have noticed that some states have banned the use of “scrubbers” (e.g. in ports, inland and/or coastal waters) to meet the air emissions from HFO. This might lead to increased use of the new generation of fuels. A range of new fuel products is entering the market, and in WP 2 we aim to achieve a better overview over the geographical distribution patterns, as well as which are the prevailing products. The variations between different products seem to be considerable. However, this assumption is based on very few samples. What the “typical properties” of a spill of the new fuel oils looks like is so far inconclusive. WP 2 and 3 will gain knowledge about the variations to expect – and hence for responders what to prepare for. The acquired knowledge will feed into already existing databases and decision-support tools, keeping the end users’ well-known tools up-to date.

There is limited knowledge about new generation fuel oils both in number of oil types and their behaviour. There is also limited knowledge about how efficient the existing equipment and methods are:

- The project aims to find methods effective to handle the most challenging of the new generation fuel oils at sea and shoreline.
- The project aims to gather information about the new generation fuel oils characteristic and risks, provide and upload this information in to existing databases.

The end-users includes contracting parties to the Bonn agreement, The Copenhagen agreement, and The EU Agency EMSA’s Consultative Technical Group for Marine Pollution Preparedness and Response represent the end-users throughout Europe.

End-users will benefit from increased knowledge of:

- the distribution of different new generation fuel oil products
- how a spill will behave in the marine and coastal environment
- methods of at-sea and shoreline response, including recommendations regarding response equipment

This will enable them to prepare for an oil spill that involves these types of oils and adjust their preparedness plans and equipment. The project will contribute to enable end-users to meet challenging situations with proper response.

The results may also be used by regulators and industry to encourage the production of fuels with less adverse properties, once an accidental spill occurs.

Description of concept

The project will be divided into four work packages (Figure 1). Milestones and deliverables are identified for each work package.

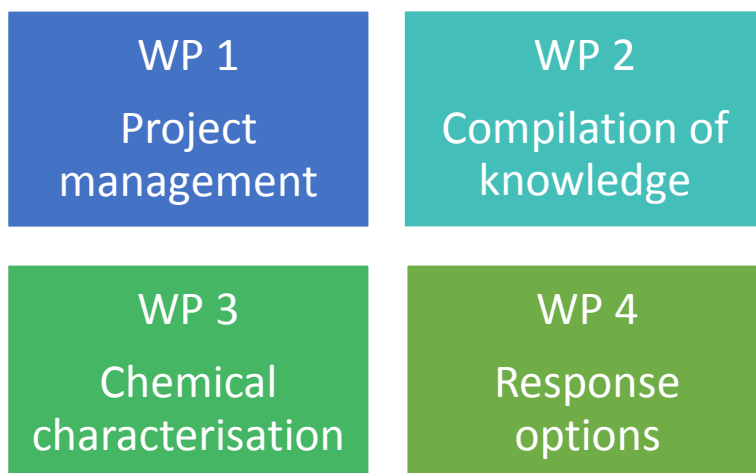


Figure 1: Work packages of the IMAROS-project

Work package 1 'project management' will comprise activities related to the management and coordination of the project.

A core project team (CPT) will be established and will be operational throughout the whole project (see section «Organisation»). The CPT will be responsible for the project progress and will monitor, evaluate and coordinate the project. Financial management of the project is also part of WP 1.

Another important responsibility of the coordinator within WP 1 is to ensure the coherence and cross-cutting between the other work packages. WP 3 is depending on the results from WP 2, and WP 4 is depending on the results from WP2 and WP 3 (Figure 2).

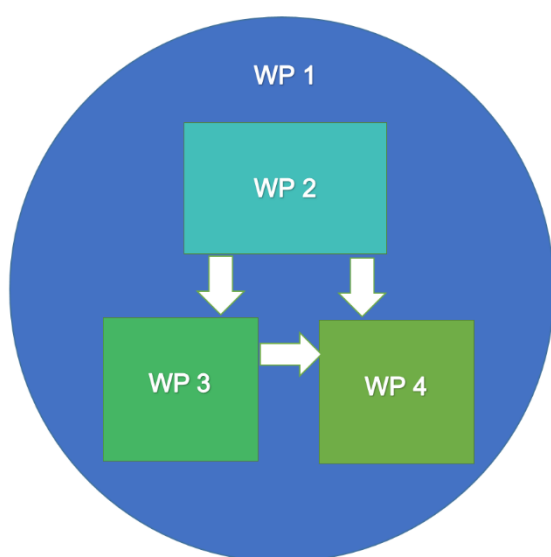


Figure 2: Interdependencies of the work packages

The objective of WP 2 will be to collect information from all project partners on the most common marine fuel products in their waters. Statistics and industry contacts will be important data sources. This is important to ensure that the samples for WP 3 and WP 4 are representative of the fuels frequently used by vessels in the project area and Europe. Samples will be collected by the project partners, in addition to other contracting parties of the Bonn Agreement, based on the inventory. Smaller sampling volumes are required for WP 3, whereas larger samples are required for WP 4. It is uncertain how many samples the project partners will be able to collect. The budget is based on the collection of 12 small samples and 3 large samples. Furthermore, the budget is based on initial chemical analysis of 10 samples, out of which 2-3 will be analysed in more detail in WP 3 (tasks 3.2 Oil weathering and tasks 3.3 Ecotoxicity) and tested in WP 4 (the large samples). If more samples than expected will be available, it may be considered to extend the number of samples for initial analyses at the cost of some of the detailed analyses. If less samples are available, it may be considered to extend the detailed analyses of the available samples within the total budget. This will be a continuous discussion at the workshops. The CPT will decide on the priorities, if the number of samples are deviating from the planned budget.

WP 3 will start with a coarse chemical screening of the collected oil samples. This will give a first indication of the products' characteristics. The chemical composition of the fuels is basic data to understand how a spill behaves when released into the sea. Some of the procedures will also be performed in order to address issues related to fresh-water and brackish water. Results from chemical characterisation is also input data to modelling tools, which are used for decision support. NCA may provide an in-kind contribution to WP 3 with help from SINTEF Ocean. SINTEF Ocean has previously been contracted by the NCA in a national project mentioned earlier within a national framework contract. Their expertise may strengthen the scientific outcome of the project.

Based on the information from the project partners in WP2 and the results from the initial chemical analyses, the most relevant samples will be selected for in-dept analysis of weathering properties in flume tank and testing of toxicity. This information is helpful to decide on adequate response techniques and to assess environmental impacts of a spill.

A few selected samples will be acquired in larger quantities for testing of response methods /equipment in WP 4. In WP 4 mechanical recovery equipment will be tested in a 7 x 10 metres test-basin (see fig. 4) and at Cedre test facility. This gives a good indication of how the tested mechanical recovery equipment will work under a real spill incident. WP 4 will also use laboratory testing to assess parameters important for chemical treatment of oil spills (use of dispersants) and for controlled in situ burning of an oil spill. Furthermore, under the task shoreline response, the oil adhesion to hard substrates will be tested for various weathering stages, and practical sorbent testing will be carried out.

Experiments will be stopped if the results indicate that it is not necessary to proceed. E.g. if *in-situ* burning seems to be impossible based on information from the initial chemical screening, further experiments will not be conducted. Another sample or another test will get a higher priority instead.

Project organisation

Project partners

The project partners are listed in Table 2.

Table 2 Project partners

Number	Role	Name	Short name	Country
1	COO	Norwegian Coastal Administration	NCA	Norway
2	BEN	Swedish Coast Guard	KBV	Sweden
3	BEN	Institut Royal des Sciences Naturelles de Belgique	RBINS	Belgium
4	BEN	Royal Danish Navy Command	RDNC	Denmark
5	BEN	CEDRE - Centre de Documentation de Recherches et d'Experimentation sur les Pollutions accidentelles des Eaux Association	CEDRE	France
6	BEN	Transport Malta	TM	Malta

Organisation

All partners have signed the grant agreement, which outlines the commitment to the project and is legally binding towards the EU commission. Furthermore, a consortium agreement will be prepared by the coordinator and discussed with the CPT. The consortium agreement should cover issues related to the internal cooperation within the consortium.

The project organisation is shown in Figure 3. WP leaders will be responsible for planning, coordination and reporting from the WP in cooperation with the project manager and senior expert.

Project Organisation

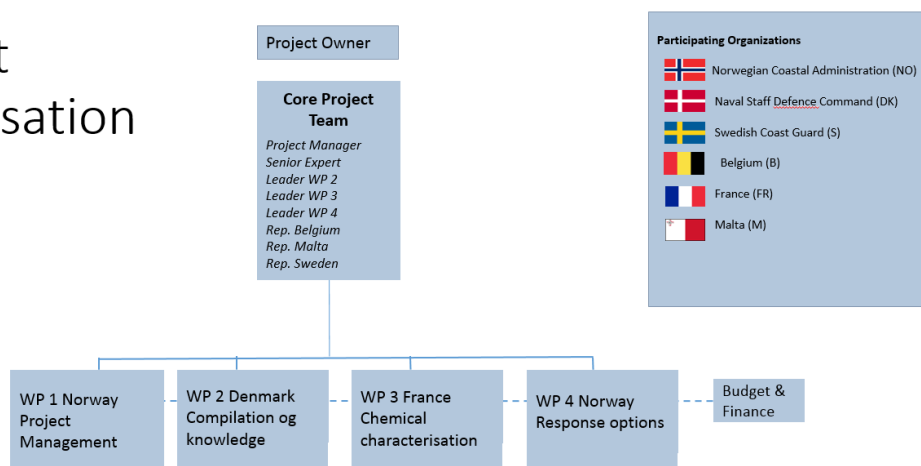


Figure 3: project organisation

The Project Manager will have the overall responsibility for the successful initiation, execution, monitoring, controlling and closure of the project, including reporting to and administrative contact with European Commission. Furthermore, this includes organising regularly project meetings, larger meetings, conferences and workshops and leading the CPT.

The coordinator's senior expert will be responsible to ensure that the professional work in the project is conducted to good standards and that the scientific work is coordinated. The coordinator's senior expert will advise the project manager and in decisions on scientific issues. The senior expert will have a special responsibility for crosscutting between the work packages. The coordinator's senior expert will be part of the CPT.

The project controller will be responsible to oversee the financial aspects, e.g. the [financial statements](#), [the ledger](#), [cost accounting](#), payroll, [accounts payable](#), [accounts receivable](#), [budgeting](#) and other tasks related to the financial follow up of the project.

Table 3 Key personnel of the different workpages. Other staff will contribute as well.

Key personnel and leaders of the different workpages

WP 1

Silje Berger, project manager and lead WP 1, NCA

Hanne Solem Holt, coordinator's senior expert, NCA

Mona Løken, administrative personnel, NCA

WP 2

Torben Iversen, lead WP 2, RDNC

Martin Ahl, RDNC

Schallier Ronny, Biologist, RBINS

Kobe Scheldeman, RBINS

Fanny Chever, junior engineer, CEDRE

Mikaël Laurent, senior engineer, CEDRE

Jimmy Uvegård, senior expert, KBV

Hanne Solem Holt, senior engineer, NCA

Jan Willie Holbu, senior engineer, NCA

Mevric Zammit, senior expert, TM

WP 3

Fanny Chever, lead WP 3, CEDRE

Julien Guyomarch, senior engineer, CEDRE

Hanne Solem Holt, senior engineer, NCA

Sébastien Legrand, Physical Oceanographer (Modeller), RBINS

Marijke Neyts, Chemist, RBINS

WP 4

Hanne Solem Holt, lead WP 4, NCA

Mikaël Laurent, senior engineer, CEDRE

Jimmy Uvegård, senior expert, KBV

Jelena Savic, senior expert, KBV

The objective of the project management will be to provide necessary interfacing between partners, participants and the European Commission. This includes to steer the project throughout to its finalization and to maintain overall control of budgetary issues related to the project.

The following key issues are identified for the project management:

- Maintain contact with EU and partners
- Oversee financial aspect
- Oversee project progress
- Risk management
- Organize meeting and workshops
- Report i.a.w Grant Agreement

Core Project Team (CPT)

A Core Project Team (CPT) will be established. Members of the CPT will be the leaders of each work package, one representative from beneficiaries not leading a work package, the Project Manager and the Coordinator's Senior Expert. The CPT might also invite others, if necessary. The CPT will monitor the progress of the project and give guidance for possible changes.

CPT meetings will be arranged monthly as Skype/telephone meetings or in conjunction with other planned activities, for instance the planned workshops.

The project manager will take final decisions, based on recommendations from and discussions with the CPT.

Core Project Team (CPT):

Silje Berger, project manager and lead WP 1, NCA

Hanne Solem Holt, Coordinators' senior expert and lead WP4, NCA

Torben Iversen, lead WP2, RDNC

Fanny Chever, lead WP 3, CEDRE

Jimmy Uvegård, KBV

Sébastien Legrand, RBINS

Mevric Zammit, TM

One of the main responsibilities for the Core Project Team will be to monitor and evaluate the project progress and the outcomes of the project. One important activity will be that the responsible for each work package must prepare status reports/or deviation reports related to the identified milestones. This includes whether the expected result is obtained, the cost status and possible deviations according to the plan, including consequences of deviation. The deliverables will also show if the project is on track. The Core Project Team will also evaluate all deliverables before they are submitted, and if necessary, adjust the next steps of work, in accordance with the outcome of the discussion in the workshops.

Indicators for the progress of the project are shown in Table 4: Indicators for the monitoring of the project.

Table 4: Indicators for the monitoring of the project

Quantitative indicators: <ul style="list-style-type: none">• Number of samples collected• Cost compared with the budget• Status reports from WP leaders	Qualitative indicators: <ul style="list-style-type: none">• Results from knowledge compilation and sampling (WP2)• Results from chemical analysis of the different oils (WP3)• Results from testing (WP4)
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Description of work

Work packages

The project will be divided into four work packages (Figure 1). Milestones and deliverables are identified for each work package.

Work package 1 Project management

Lead beneficiary: Norwegian Coastal Administration (NCA), Norway
Contribution: All partners
Duration: January 2020 – December 2021
Objectives: Project management and cross-cutting activities

Description of the activities		
Task number	Task name	Description
1.1	Planning	There will be established a Core Project Team, CPT, that will be led by the project manager. The CPT will plan, monitor and coordinate the project, and will be responsible for the project progress. All participating beneficiaries will contribute in planning of the project through a planning meeting, and will have to commit to the detailed project plan listed as deliverable D1.1.
1.2	Meetings	<p>Start-up meeting There will be arranged a start-up meeting for the CPT members to plan their activities during the project, and to prepare for a planning meeting. The meeting will be conducted back to back with the Kick-off meeting in Brussels.</p> <p>Planning meeting A planning meeting for all participating beneficiaries will be conducted to agree on a detailed project plan listed as deliverable D1.1. The meeting will be conducted in Denmark in conjunction with the planned Workshop WP2 as described in Task 1.3.</p> <p>CPT-meetings There will be conducted frequent meetings for the CPT during the project period as teleconferences/skype-meetings or similar. The meetings might also be face to face in conjunction with other project activities.</p> <p>Final stakeholders meeting There will be conducted a final stakeholder meeting at the end of the project to sum up the results, lessons learned, and evaluate the</p>

		project. The meeting will be conducted in Malta, and will be open to countries and organisations who take interest in the projects objectives and results.
1.3	Workshops	<p>Three workshops are planned during the project period; Workshop WP 2, Workshop WP 2/WP 3 and Workshop WP 3/WP 4.</p> <p>Workshop WP 2 Workshop WP 2 will be conducted to plan and start up WP2. It could have been listed as a task for work package 2, but since it will be arranged back to back with the planning meeting in Denmark, it seems rational to gather all the workshops here in work package 1. Since the content of the Workshop WP 2 relates to WP 2, the report from the workshop are listed as deliverable under the WP 2.</p> <p>Workshop WP 2/WP 3 Workshop WP 2/WP 3 will be cross-cutting work package 2 and 3 as the preliminary results of WP 2 will be of vital importance for WP3. This workshop will be conducted towards the end of WP2, and are arranged in France. Since the content of the Workshop WP 2/ WP 3 relates to WP 2/WP 3, the report from the workshop are listed as deliverable under the WP 3.</p> <p>Workshop WP 3/WP 4 Workshop WP 3/WP 4 will be will be cross-cutting work package 3 and 4 as it will serve as an area for sharing results from WP 3 and agree on a plan for further activities for WP 4. This workshop will be conducted in Norway. Since the content of the Workshop WP 3/ WP 4 relates to WP 3/WP 4, the report from the workshop are listed as deliverable under the WP 4.</p>
1.4	Project monitoring and evaluation	The CPT will be responsible for the project progress and will evaluate the progress of each work package in collaboration with the lead beneficiary of each work package, in order to meet the expected outcome. The CPT will have to make corrections and set limitations when necessary.
1.5	Financial management	The CPT will, in accordance with the Norwegian administrative personnel, be responsible of monitoring the financial status and evaluate the budget in order to meet the expected outcome.
1.6	Reporting	<p>The coordinator, in accordance with the CPT, will be responsible for providing the Commission with two progress reports during the project period. The progress reports will show how the project develops related to the detailed project plan and budget. The progress reports are listed as deliverable D1.2 and D1.3.</p> <p>A Final Report will also be provided, and is listed as deliverable D1.4. In addition, there will be reports that summarises the results for each work package.</p>

Division of work						
Task number (continuous numbering linked to WP)	Task name	Participant		With help of in-kind contribution/partner organisation (Yes/No and which)		
		Name	Role (COO, BEN, LTP, OTHER)			
1.1	Planning	NCA	COO	Yes, all beneficiaries		
1.2	Meetings	NCA	COO	Yes, RDNC and TM		
1.3	Workshops	NCA	COO	Yes, RDNC and Cedre		
1.4	Project monitoring and evaluation	NCA	COO	Yes, all beneficiaries		
1.5	Financial management	NCA	COO	Yes, all beneficiaries		
1.6	Reporting	NCA	COO	Yes, all beneficiaries		
Milestones (outputs) & deliverables						
<i>The labels used mean:</i>						
<i>Public — fully open (e.g. web)</i>						
<i>Confidential — restricted under the conditions of the grant agreement</i>						
<i>Classified — EU-Classified under Commission Decision No 2015/444</i>						
Milestone number (continuous numbering)	Milestone name	Work package number	Lead beneficiary	Means of verification	Due date (month number)	Description
MS1	Planning meeting	1	RDNC	A planning meeting has been conducted	2	All participating beneficiaries have agreed on a plan for the project and its work packages.

MS2	Workshop WP 2	1	RDNC	A workshop to start up WP 2 have been conducted at the same place as the planning meeting and as a follow up to the planning meeting	2	All participating beneficiaries have agreed on how to carry out WP 2.	
MS3	Workshop WP 2/WP 3	1	Cedre	A Workshop cross-cutting WP 2 and WP 3 has been conducted	10	All participating beneficiaries have contributed with input to the WP 2 and have agreed on the way further in WP 3.	
MS4	Workshop WP 3/WP 4	1	NCA	A Workshop cross-cutting WP 3 and WP 4 has been conducted	13	All participating beneficiaries have contributed with input to the projects WP 3 and agreed on the way further in WP 4.	
MS5	Final stakeholder meeting	1	TM	A final stakeholder meeting has been conducted	23	Results from work packages 2, 3 and 4 are presented to all participating beneficiaries at a final stakeholders meeting. Other countries and organisations who take interest in the project's objectives and results are also invited.	
Deliverable number (continuous numbering linked to WP)	Deliverable name	Work package number	Lead beneficiary	Type	Dissemination level	Due date (month number)	Description (including format and language)
D1.1	Detailed project plan	1	NCA	[R — Document, report]	[Public]	2	A detailed project plan that will meet the milestones and deliverables of the work packages 2, 3 and 4 will be available. It will be available in English as a pdf-document.

D1.2	Progress report 1	1	NCA	/R — Document, report/	/Public/	8	A first progress report that shows how the project develops related to the detailed project plan and budget will be available in English as a pdf-document.
D1.3	Progress report 2	1	NCA	/R — Document, report/	/Public/	16	A second progress report that shows how the project develops related to the detailed project plan and budget will be available in English as a pdf-document.
D1.4	Film	1	NCA	/DEC - video/	/Public/	22	A film where the results from work packages 2, 3 and 4 are presented is available to all beneficiaries and published at the projects website.
Estimated budget — Resources							
	A. Personnel	B. Travel & subsistence	C. Sub-contracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
WP 1	229 227	59 525			37 250	22 820	348 822

Work package 2 Compilation of knowledge

Lead beneficiary: Royal Danish Navy Command, RDNC, Denmark
Contribution: All partners
Duration: February 2020 – December 2020
Objectives: The objective of work package 2 is to gather an overview over new generation marine fuel products (ECA compliant fuels) that are frequently encountered in European waters, supplied from European refineries or through European bunker suppliers.
 Furthermore, acquire small volume samples from the prevailing, and hence most relevant products for WP 3, as well as identify possible access points for acquiring larger samples for WP4.
 Finally, acquire large volume samples of the most relevant products for testing in WP 4.

Description of the activities		
Task number	Task name	Description
2.1	Overview of new products	<p>There will be conducted different activities to get an overview of new products:</p> <ul style="list-style-type: none"> • Identify the most prevailing and relevant ECA compliant fuel products in European waters, based on input from each project partner. • Input from statistics and existing databases. • Gather input from industry – refineries, bunker fuel suppliers and shipping. • Decide on most relevant products for further investigation in WP 3 and WP 4. • Identify challenges and experiences related to the products, if available.
2.2	Collect small samples for WP 3	<p>Collect small volume samples for WP 3.</p> <p>This task is listed in WP 2 since all beneficiaries are participating in WP 2 and contributing to establish an overview of new products as a basis for collecting samples, as well as assisting in the acquisition of the samples.</p>
2.3	Collect large samples for WP 4	<p>Collect large volume samples for WP 4. The number of samples and types of oils will be decided at the Workshop WP 2/WP 3.</p> <p>This task is listed in WP 2 since all beneficiaries are participating in WP 2 and contributing to establish an overview of new products as a basis for collecting samples, as well as assisting in the acquisition of the samples. Selection of products for WP 4 will be based on the outcome of other activities in WP 2 and WP 3.</p>

Division of work							
Task number	Task name	Participant		With help of subcontracting / in-kind contributions / partner organisation (Yes/No and which)			
		Name	Role (COO, BEN, LTP, OTHER)				
2.1	Overview over new products	RDNC	BEN	Yes, all beneficiaries			
2.2	Collect small samples for WP 3	RDNC	BEN	Yes, all beneficiaries			
2.3	Collect large samples for WP 4	RDNC	BEN	Yes, all beneficiaries			
Milestones (outputs) & deliverables							
Milestone number (continuous numbering)	Milestone name	Work package number	Lead beneficiary	Means of verification	Due date (month number)		Description
MS6	Small samples collected	2	RDNC	Samples present in responsible laboratory	6		A number of small samples are collected for analysis in WP 3.
MS7	Large samples collected	2	RDNC	Large samples (3 – 6 m³ per sample) ready at test sites	12		A smaller number of large oil samples for testing in WP 4 has been collected as agreed in Workshop WP 2/WP 3.
Deliverable number (continuous numbering)	Deliverable name	Work package number	Lead beneficiary	Type	Dissemination level	Due date (month number)	Description (including format and language)

D2.1	Summary of Workshop WP 2	2	RDNC	[R — Document, report]	[Public]	3	Report in pdf-format containing a detailed plan for WP 2. Se task 1.3 for more information.
D2.2	Overview of existing products	2	RDNC	[R — Document, report]	[Public]	12	Report in pdf-format summarizing the findings of WP 2, including an overview of all relevant products and samples. Recommendations for WP 3, and basis for selection of products for WP 3 and WP 4.
Estimated budget — Resources							
	A. Personnel	B. Travel & subsistence	C. Sub-contracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
WP 2	99 793	14 936	2 000	0	72 000	13 211	201 940

Work package 3 Chemical characterisation

- Lead beneficiary:** CEDRE, France
Contribution: Belgium, Norway
Duration: July 2020 – October 2020
Objectives:
- The objective of WP 3 is to get knowledge of the chemical composition and physical properties of relevant products. Knowledge of chemical and physical properties of the oil is crucial in order to evaluate response strategy and potential environmental impacts.
 - Results from the chemical characterisation will form the basis for the selection of representative oils for testing in WP 4
 - Data from WP 3 will also be reference data for oil spill identification for spills from unknown sources (Oil spill forensics, COSIWEB)
 - Data from WP 3 will be input data to existing modelling tools and databases for decision support

Description of the activities		
Task number	Task name	Description
3.1	Physico-chemical characterisation	<p>Initial chemical screening of a broad range of small oil samples collected in WP 2.</p> <ul style="list-style-type: none"> ▪ Screening: The screening will consist of testing of viscosity, density, flash point, pour point, and nC7-asphaltenes, waxes, evaporation and OSCAR characterisation (detailed chemical composition).
3.2	Oil weathering	<p>Weathering will change the physical and chemical behaviour of the oil over time. This will be tested in laboratory scale and meso-scale.</p> <ul style="list-style-type: none"> ▪ Laboratory scale: To simulate oil weathering at sea, selected samples will be exposed to distillation process (oils topped at 150°C, 200°C and 250°C). Residues of distillation process will then be emulsified with seawater (at 50%, 75%, maximum % water

		<p>content). The residue obtained at 250°C will be photo-oxidized for 4 days to simulate maximum weathering at sea. Each sample will then be characterized by various physical and chemical measurements (see task 3.1).</p> <ul style="list-style-type: none"> ▪ Meso-scale (flume tank): selected samples will be studied for 7 days in order to know their fate and behaviour during the first hours and first days after a spill. Surface oil samples will be taken periodically to determine oil characteristics (evaporation, chemical composition, emulsification, density, viscosity, dispersibility and oil adhesion).
3.3	Ecotoxicity	<p>Oil spilt at sea will release toxic components into the water column. This will be tested in the laboratory.</p> <ul style="list-style-type: none"> ▪ OCNS ecotoxicity testing following ISO guidelines: Water Accomodated Fractions (WAFs) obtained from selected oil samples will be tested on different organisms: growth inhibition test using the marine algae <i>Skeletonema costatum</i>, acute toxicity test using the marine copepod <i>Acartia tonsa</i>. Oils will be directly tested during sediment bioassay using the amphipod <i>Corophium volutator</i>.
3.4	Identification /forensics	<p>All oils can be identified by their specific composition of compounds. Information about the oils will be obtained and entered into an existing database.</p> <ul style="list-style-type: none"> ▪ Samples will be prepared and analysed in accordance with the recommendations of the CEN Technical Report (European committee for standardization) "Oil Spill Identification – Waterbone petroleum and petroleum products – Part 2: analytical methodology and interpretation of results based on GC-FID and GC-MS low resolution analyses". GC-FID analysis will be used in a first phase for the screening of the samples (general shapes of the oils and <i>n</i>-alkanes distributions). The second step of the method of comparison will consist in GC-MS analyses to determine polycyclic aromatic hydrocarbons (PAHs), saturates (linear alkanes and isoprenoids) and geochemical markers (biomarkers: hopanes, steranes/diasteranes and triaromatic steranes). ▪ Samples will then be entered in the COSIWEB database. This will allow users to rapidly compare data simultaneously with all the oils included in the database.
3.5	Modelling weathering of Low Sulphur Fuel Oil	<p>Data obtained from laboratory analysis will be compiled into different modelling tools.</p> <ul style="list-style-type: none"> ▪ Prepare data from tasks 3.1 and 3.2 and compile them as input to different modelling tools ▪ In the Bonn Agreement area, most contracting parties operate their own national oil drift and fate models. The objective of this task is to assess the ability of these existing models to simulate the physical behavior and the weathering processes for the low sulphur fuel oil tested in the flume tank experiments (task 3.2). In case the existing weathering parametrizations prove to be unsuitable to simulate the time-evolution of key parameters such as oil density, viscosity, surface tension, solubility and vapour pressure, we will try to elaborate new weathering parametrizations based on the time evolution on the oil mixture composition and percentage of sulphur. These data should be available as outcome of the fingerprint analysis [task3.4]. The outcome of this task will be a report summarizing the main findings of the task and suggesting best practice to be implemented in the different existing national models.

Division of work						
Task number	Task name	Participant		With help of subcontracting / in-kind contributions / partner organisation (Yes/No and which)		
		Name	Role (COO, BEN, LTP, OTHER)			
3.1	Physico-chemical characterisation	Cedre	BEN	Yes, NCA		
3.2	Oil weathering	Cedre	BEN	Yes, NCA		
3.3	Ecotoxicity	Cedre	BEN	Yes, NCA		
3.4	Identification /forensics	RBINS	BEN	Yes, Cedre		
3.5	Input to modelling	RBINS	BEN	Yes, Cedre and NCA		
Milestones (outputs) & deliverables						
Milestone number (continuous numbering)	Milestone name	Work package number	Lead beneficiary	Means of verification	Due date (month number)	Description
MS8	Oil characterisation available for modelling task	3	Cedre (as leader of task 3.2) and RBINS (as leader of task 3.4 and 3.5)	RBINS, as leader of the modelling task, has acknowledged the necessary lab data and are able to start the modelling task.	18	The physico-chemical characteristics of the oil samples as well as the results of the flume experiments task 3.2 must be available to start the modelling task task 3.5.
MS9	Data ready as input to COSIWEB database	3	RBINS	Oils in COSIWEB	18	Data obtained in task 3.4 will be entered in the COSIWEB database.

Deliverable number (continuous numbering)	Deliverable name	Work package number	Lead beneficiary	Type	Dissemination level	Due date (month number)	Description (including format and language)
D3.1	Summary of Workshop WP 2/WP 3	2	Cedre	/R — Document, report/	/Public/	11	Report in English is available in pdf-format, containing the summary of Workshop WP 2/WP 3. See task 1.3 for more information.
D3.2	Summary report WP 3	3	Cedre	/R — Document, report/	/Public/	22	Summary report in English is available in pdf-format, summarising the results of WP 3, including the choice of products for WP 4.
D3.3	Dataset available in COSIWEB and modelling tools	3	RBINS	/DATA — data sets, microdata, etc/	/Public/	22	Data available in databases for all users.
D3.4	Best practice document to simulate the weathering processes of low sulphur fuel oil	3	RBINS	/R — Document, report/	/Public/	22	Report in English is available in pdf-format, summarising the main finding of the task and suggesting recommendations to be implemented in the different existing national models in order to simulate the weathering processes of low sulphur fuel oil.
Estimated budget — Resources							
	A. Personnel	B. Travel & subsistence	C. Sub-contracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
WP 3	135 040		3 000	1 667	12 000	10 620	162 327

Subcontracting					
Subcontract number (continuous numbering linked to WP)	Subcontract name	Description (including task number to which it is linked)	Estimated costs (EUR)	Justification (why is subcontracting necessary?)	Best-value-for-money (how do you intend to ensure it?)
S2.1	SGS	Task 3.1, Pour point analysis of oil samples	1000	SGS is accredited laboratory who are able to perform pour point analysis	Cedre need assistance to perform this analysis of the oil samples

Work package 4 Response options

Lead beneficiary: Norwegian Coastal Administration, Norway

Contribution: France, Sweden

Duration: October 2020 – November 2021

Objectives: The objective of WP 4 is to be able to give recommendations regarding the applicability of different response methods and equipment to the new generation fuel oils.

Description of the activities		
Task number	Task name	Description
4.1	Mechanical recovery	<p>Mechanical oil recovery will be tested at test facilities at NCA and Cedre.</p> <ul style="list-style-type: none"> ▪ Test of different oil skimmers for mechanical oil recovery under different conditions. ▪ Comparison of test procedures from different partners: Cedre's and NCA's standardised protocols will be compared.
4.2	Dispersants	<p>Chemical dispersants will be tested at test facilities at Cedre.</p> <ul style="list-style-type: none"> ▪ Chemical dispersibility of the oils, weathered at the laboratory and the meso-scale, will be studied according to IFP and MNS protocols: Time window of opportunity will be determined. Comparison of dispersants efficiency and dosage testing may also be carried out.
4.3	<i>In situ</i> burning	<p><i>In situ</i> burning will be tested at test facilities at Cedre.</p> <ul style="list-style-type: none"> ▪ Laboratory testing of ignitability of oils: Ignitability and burning efficiency of floating oil slicks (fresh and weathered) will be assessed thanks to a device developed at Cedre. Combined with the weathering study (task 3.2), tests will allow the determination of windows of opportunity for <i>in situ</i> burning as a response option.
4.4	Shoreline clean-up	<p>Shoreline clean-up will be tested at test facilities at Cedre and NCA.</p> <ul style="list-style-type: none"> ▪ Oil adhesion on hard (rocky shore) substrates will be assessed for various weathering stages, thanks to a special device developed at Cedre (the high pressure cleaning efficiency test device). It will allow the determination of oil adhesion on granite tiles. ▪ Simple practical testing of sorbents will be carried out in the NCA test facility.

Division of work						
Task number	Task name	Participant		With help of subcontracting / in-kind contributions / partner organisation (Yes/No and which)		
		Name	Role (COO, BEN, LTP, OTHER)			
4.1	Mechanical recovery	NCA	COO	Yes, Cedre and KBV		
4.2	Dispersants	Cedre	BEN	Yes, NCA		
4.3	<i>In situ</i> burning	Cedre	BEN	Yes, NCA		
4.4	Shoreline clean-up	Cedre	BEN	Yes, NCA and KBV		
Milestones (outputs) & deliverables						
Milestone number (continuous numbering)	Milestone name	Work package number	Lead beneficiary	Means of verification	Due date (month number)	Description
MS10	One test performed for mechanical oil recovery	4	NCA	One oil skimmer has been tested	21	One oil skimmer has been tested as agreed at Workshop WP 3/WP 4.
MS11	One test preformed for dispersants	4	Cedre	One oil has been tested for dispersant application	18	One oil sample has been tested for dispersant application as agreed at Workshop WP 3/WP 4.
MS12	One test performed for <i>in-situ</i> burning	4	Cedre	One oil has been tested for ignitability	21	One oil sample has been tested for ignitability as agreed at Workshop WP 3/WP 4.

MS13	One test performed for shoreline clean-up	4	Cedre	One oil has been tested for shoreline clean-up		21	One oil sample has been tested for shoreline clean-up as agreed at Workshop WP 3/WP 4.
Deliverable number (continuous numbering)	Deliverable name	Work package number	Lead beneficiary	Type	Dissemination level	Due date (month number)	Description (including format and language)
D4.1	Summary of Workshop WP 3/WP 4	4	NCA	[R — Document, report]	[Public]	14	Report in English is available in pdf-format, containing the summary of Workshop WP 3/WP 4. See task 1.3 for more information.
D4.2	Summary report WP 4	4	NCA	[R — Document, report]	[Public]	23	Report in English is available in pdf-format, outlining the test results and other outcomes from WP 4.
Estimated budget — Resources							
	A. Personnel	B. Travel & subsistence	C. Sub-contracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
WP 4	99 351	14 500	7 000	0	34 600	10 881	166 332

Subcontracting					
Subcontract number (continuous numbering linked to WP)	Subcontract name	Description (including task number to which it is linked)	Estimated costs (EUR)	Justification (why is subcontracting necessary?)	Best-value-for-money (how do you intend to ensure it?)
S2.1	SINTEF	Task 4.1, Initial analysis of oil samples	5000	SINTEF is accredited laboratory who are able to perform necessary analysis	NCA need assistance to perform this analysis of the oil samples

Milestones

The projects milestones are listed chronologically in Table 5.

Table 5: Milestones

Milestone number	Title	WP	Lead beneficiary	Due date	Means of verification
MS1	Planning meeting	WP1	RDNC	2	All participating beneficiaries have agreed on a plan for the project and its work packages.
MS2	Workshop WP 2	WP1	RDNC	2	All participating beneficiaries have agreed on how to carry out WP 2.
MS6	Small samples collected	WP2	RDNC	6	A number of small samples are collected for analysis in WP 3.
MS3	Workshop WP 2/WP 3	WP1	CEDRE	10	All participating beneficiaries have contributed with input to the WP 2 and have agreed on the way further in WP 3.
MS7	Large samples collected	WP2	RDNC	12	A smaller number of large oil samples for testing in WP 4 has been collected as agreed in Workshop WP 2/WP 3.
MS4	Workshop WP 3/WP 4	WP1	NCA	13	All participating beneficiaries have contributed with input to the projects WP 3 and agreed on the way further in WP 4.
MS8	Oil characterisation available For modelling task	WP3	CEDRE	18	The physico-chemical characteristics of the oil samples as well as the results of the flume experiments task 3.2 must be available to start the modelling task task 3.5.
MS9	Data ready as input to COSIWEB database	WP3	RBINS	18	Data obtained in task 3.4 will be entered in the COSIWEB database.
MS11	One test performed for dispersants	WP4	CEDRE	18	One oil sample has been tested for dispersant application as agreed at Workshop WP 3/WP 4.
MS10	One test performed for Mechanical oil recovery	WP4	NCA	21	One oil skimmer has been tested as agreed at Workshop WP 3/WP 4.
MS12	One test performed for In-situ burning	WP4	CEDRE	21	One oil sample has been tested for ignitability as agreed at Workshop WP 3/WP 4.
MS13	One test performed for Shoreline clean-up	WP4	CEDRE	21	One oil sample has been tested for shoreline clean-up as agreed at Workshop WP 3/WP 4.
MS5	Final stakeholder meeting	WP1	TRANSPORT MALTA	23	Results from work packages 2, 3 and 4 are presented to all participating beneficiaries at a final stakeholders meeting. Other countries and organisations who take interest in the project's objectives and results are also invited.

Deliverables

The projects' deliverables are listed chronologically in Table 6.

Table 6: Deliverables

Deliverable number	Deliverable title	WP	Lead beneficiary	Type	Dissemination level	Due date
D1.1	Detailed project plan	WP1	NCA	Report	Public	2
D2.1	Summary of Workshop WP2	WP2	RDNC	Report	Public	3
D1.2	Progress report 1	WP1	NCA	Report	Public	9
D3.1	Summary of Workshop WP2/WP 3	WP3	CEDRE	Report	Public	11
D2.2	Overview of existing products	WP2	RDNC	Report	Public	12
D4.1	Summary of Workshop WP 3/WP 4	WP4	NCA	Report	Public	14
D1.3	Progress report 2	WP1	NCA	Report	Public	17
D1.4	Film	WP1	NCA	Film	Public	22
D3.2	Summary report WP 3	WP3	CEDRE	Report	Public	22
D3.3	Dataset available in COSIWEB and modelling tools	WP3	RBINS	Dataset	Public	22
D3.4	Best practice document to simulate the weathering processes of low sulphur fuel oil	WP3	RBINS	Report	Public	22
D4.2	Summary report WP 4	WP4	NCA	Report	Public	23

Timetable

ACTIVITY	2020												2021											
	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19	M 20	M 21	M 22	M 23	M 24
Activity 1.1 – Planning																								
Activity 1.2 – Meetings																								
Activity 1.3 – Workshops																								
Activity 1.4 – Project monitoring and evaluation																								
Activity 1.5 – Financial management																								
Activity 1.6 – Reporting																								
Activity 2.1 – Overview over new products																								
Activity 2.2 – Collect small samples for WP 3																								
Activity 2.3 – Collect large samples for WP 4																								
Activity 3.1 – Physico-chemical characterisation																								
Activity 3.2 – Oil weathering																								
Activity 3.3 – Ecotoxicity																								

[illegible]

Budget

An overview of the budget is shown in Table 7 and Table 8. For further specifics, see the detailed budget in the grant agreement.

Table 7: Consolidated budget per participant per cost types.

	A. Personnel	B. Travel & subsistence	C. Subcontracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
PARTICIPANT NCA							
TOTAL COSTS PARTICIPANT	199 779,00	65 675,00	11 000,00	0,00	52 800,00	23 047,78	352 301,78
PARTICIPANT KBV							
TOTAL COSTS PARTICIPANT	42 189,00	9 628,00	0,00	0,00	5 200,00	3 991,19	61 008,19
PARTICIPANT RBINS							
TOTAL COSTS PARTICIPANT	99 250,00	2 428,00	0,00	1 666,67	5 450,00	7 615,63	116 410,30
PARTICIPANT RDNC							
TOTAL COSTS PARTICIPANT	42 596,29	2 580,00		0,00	58 000,00	7 222,34	110 398,63
PARTICIPANT CEDRE							
TOTAL COSTS PARTICIPANT	156 077,35	6 330,00	1 000,00	0,00	29 200,00	13 482,51	206 089,86
PARTICIPANT TM							
TOTAL COSTS PARTICIPANT	23 520,00	2 320,00	0,00	0,00	5 200,00	2 172,80	33 212,80
TOTAL COSTS PARTICIPANTS	563 411,64	88 961,00	12 000,00	1 666,67	155 850,00	57 532,25	879 421,56

Table 8: Consolidated budget per Workpackage per cost type.

	A. Personnel	B. Travel & subsistence	C. Sub-contracting	E. Other goods & services		F. Indirect costs	Total
				E. 1 Equipment	E.2 Goods & services		
WP 1	229 227	59 525			37 250	22 820	348 822
WP 2	99 793	14 936	2 000	0	72 000	13 211	201 940
WP 3	135 040		3 000	1 667	12 000	10 620	162 327
WP 4	99 351	14 500	7 000	0	34 600	10 881	166 332
TOTAL COSTS	563 411	88 961	12 000	1 667	155 850	57 532	879 421

Risk management strategy

A risk assessment for the project was performed in connection with the application process (Table 9). The risks will be continuously monitored by the project manager and the project partners. Mitigation measures will be taken as appropriate.

Table 9: Identified risks and mitigation measures

Risk number	Description of risk	Work package number	Proposed risk-mitigation measures
1.	Problems to get necessary samples. Probability: medium Impact: high	WP 2	<ul style="list-style-type: none"> Actively use contacts of all involved parties Involve industry Involve countries outside the project and regional agreements
2.	One or several of the involved partners are involved in real oil spill response operations. Probability: high Impact: medium	WP 1 - 4	<ul style="list-style-type: none"> Consider switch of WP lead, complementary expertise is available among the partners Consider request to Commission to delay the project This risk also inherits an opportunity: Samples from an actual spill may become available to the project. Involve an independent consultancy with relevant competence and experience
3.	Analysis of samples are much more costly than anticipated. Probability: low Impact: medium	WP 3 and 4	<ul style="list-style-type: none"> Reduce number of analysed samples or reconsider type of analysis.
4.	The cost for the purchase of samples (small and large) are much higher than budget. Probability: low Impact: medium	WP 2	<ul style="list-style-type: none"> Consider less samples
5.	Important data lost because of spam or cyber attack Probability: Medium Impact: Large	All WP	<ul style="list-style-type: none"> Good security systems by all partners

Communication and visibility

The CPT will develop a communication plan for the project as part of the detailed planning process.

A project web site will inform about the project and its outcomes. The web site will underline that this is an EU funded project and the correct EU logo will be incorporated. Project reports will be publicly available on the project web site. The project partners and interested parties (e.g. the Bonn Agreement) will be encouraged to link to the website. All reports, presentations and other project related material will have the EU logo and acknowledge the source of funding.

Key information about the project will be presented in a folder which will be used as a support to presentations of the project and its outcomes, including general information about the EU funding and the EU logo.

Project reports and general project updates will be shared and presented in relevant international fora, such as EMSA CTG Marine Pollution, DG ECHO - EMSA workshops, Bonn-agreement, Helcom, REMPEC, IMO PPR and international oil spill conferences like "Interspill" and "IOSC".

The final stakeholder meeting will be open to interested parties outside the project. The results from the project will be shared at this conference, and the way forward will be discussed. Results from the single work packages may be published and presented throughout the whole duration of the project.

A short video will be produced to present the project and its results. The aim is to present the outcomes of the project in a descriptive and practical manner. The main target group of this production are the end users – responders all across Europe. Findings of the project will also be communicated via social media.

Pending on the results from the project a possible paper will be submitted to IMO PPR subcommittee for consideration and follow up