

## Deliverable D2.2: Overview of the existing products

### Introduction

This report summarises the work and achievements within IMAROS Work Package (WP) 2, “*Compilation of Knowledge*”.

WP2 commenced January 1<sup>st</sup> 2020 and concluded 30<sup>th</sup> 2021.

The work within WP2 can be broadly divided into the following phases:

- January 1<sup>st</sup>-February 3<sup>rd</sup> 2020: Preparations for workshop.
- February 4<sup>th</sup>-6<sup>th</sup> 2020: workshop on “*compilation of knowledge and knowledge gaps*”
- February-March 2020: Preparations for dialogue with industrial contacts.
- April 2020 – June 2021<sup>1</sup>: Dialogue with industry, identification of oils for further testing.

The focus of WP2 was concentrated around the following topics:

- Understanding the market and commercial mechanisms, and
- identifying trends that should be reflected in the selection of oils for testing, leading to selecting oils on the basis of representativeness at present and in the future.

### Workshop

A WP 2 workshop (listed as Milestone 2 in Project Application) on understanding the commercial mechanisms and setting the direction for dialogue with industry was held February 2<sup>nd</sup>-4<sup>th</sup> 2020. During the workshop, commercial companies briefed on the perspectives of the bunker deliverer, the end-user (the shipping company) as well as independent experts.

- The end-user’s perspective was presented by the operational management of Ultraship, a worldwide shipping company with a significant amount of activities in Europe.
- The deliverer’s perspective was presented by the operational management of Bunkerone, a company within the Bunkerholding/DanBunker alliance which is a major bunker company in both European and global perspective.
- The independent expert’s view was presented by the Deputy Secretary General of BIMCO a worldwide reference organisation for international maritime affairs.

At the end of the experts’ briefings the following conclusions were apparent:

- Oil is not just oil. 20+ parameters are important to define how the oil will behave when spilled into the sea in addition to those that are important to define the environmental impact and response options. On the other hand shipping companies only look into very few characteristics when procuring bunker. (Sulphur content, viscosity, flashpoint and price).
  - This means shipping companies may believe their oil from different bunker companies is quite similar to each other, but in fact may vary significantly.
- Blending of oils is common<sup>2</sup>. This means the unique characteristics of an oil product will merge/dissolve when mixed with other products.
  - This means the shipping company is unaware of the origin of its’ bunker.

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<sup>1</sup> Expected end date. The dialogue with industry on administrative issues may go beyond June 2021.

<sup>2</sup> Blending of oils is common among the oil producers and bunker companies. Blending on board is uncommon as the ship needs to be able to identify which oil has caused the problem in case a problem arises.

- Price is *the* factor that will define future market trends. This means the number of significant parameters that specify an oil product is much higher than those vital for the shipping company that procures the oil. The gap of awareness regarding the fuels used would also mean e.g. insurance costs have not adapted to new oils, that may have larger socio-economic consequences or be more difficult and expensive to respond to.

The experts' views were used to discuss different aspects of representativeness. It was decided to focus our interest towards refineries and bunker operators and with that decision in hand the workshop attendees started to prepare the documents for dialogue with industry.

A report on the workshop was issued in March 2020

<https://ec.europa.eu/research/participants/grants-app/reporting/DLV-874387>

### **Establishing dialogue with industry**

The documents were finalised by written procedure and complete early March 2020.

Reach-out to industry was conducted by several lines of communication:

- IMAROS partners engaged in dialogue with industry within own country.
- On IMAROS request, EMSA contacted their fleet of stand-by vessels. The fleet is in general working as bunker vessels when not activated by EMSA. The EMSA fleet provided valuable information as input for our understanding of the oil market mechanisms and trends. Some of the oils received for initial testing – including one of the oils selected for full testing – was in fact identified via the EMSA assistance to IMAROS.
- Briefings in the Bonn Agreement, HELCOM, REMPEC and EMSA Consultative Technical Group on Marine Pollution, Preparedness and Response (CTG MPPR). Some of our network of colleagues in those forums reached out to their national industry and this also led to good feedback – including one oil selected for the full testing. Oils for initial and further testing are listed below.

### **Dialogue with Industry**

Naturally, the wide reach-out strategy resulted in some industrial companies being contacted twice but whenever happening this was clarified in a positive spirit and clear lines of communication established.

Based on the dialogue with industry it is concluded there is no clear market trend<sup>3</sup>. The price swap between Heavy Fuel Oil (HFO) and low sulphur products has changed several times. At one time it paid off to invest in scrubbers, at other times new generation ultra-low sulphur oils were cheaper than heavy fuel. Hence, the market trends remain unclear at present.

Following the variation in price balance between HFO and Low Sulphur oils the dialogue with industry has been indeed interesting as it indicates the same very high uncertainty (variation) on the expectation to market development. A number of potential rationales could explain this variation:

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<sup>3</sup> In March 2020 the oil prices decreased approximately 30 percent over one weekend and 45 percent over 5 days. The market was at that time shaky and some oil products from USA had a negative price for a few days. Prices stabilised over the following weeks.

- The feedback is provided over months. Hence the assessment could reflect different places on the price-balance curve.
- Although oil prices are global, there may to some extent be regional mechanisms that affect the regional market.

#### Oil Samples

Based on the dialogue with industry, industrial cooperativeness and relevance of products IMAROS received 13 samples for initial testing.

Those were:

Samples	Nature	Identification	Country of origin
<b>IM-1</b>	ULSFO	Stena Oil RMD80	Sweden
<b>IM-2</b>	VLSFO	Stena Oil RMG380	Sweden
<b>IM-3</b>	VLSFO	Minerva Bunkering ex Service terminal Rotterdam (ex Litasco)	Belgium
<b>IM-4</b>	VLSFO	Minerva Bunkering ex Sea tank 700 - Antwerpen (ex Litasco)	Belgium
<b>IM-5</b>	VLSFO	Wakashio	France
<b>IM-6</b>	VLSFO	Valletta Bunkers (oceanbat)	Malta
<b>IM-7</b>	VLSFO	Peninsula Petroleum	Belgium
<b>IM-8</b>	VLSFO	Rotterdam VNPI VLSFO 1	Netherlands
<b>IM-9</b>	ULSFO	Rotterdam VNPI ULSFO 2	Netherlands
<b>IM-10</b>	VLSFO	VNPI VLSFO 3	Netherlands
<b>IM-11</b>	VLSFO	VNPI VLSFO 4	Netherlands
<b>IM-12</b>	VLSFO	Petronav	Cyprus
<b>IM-13</b>	VLSFO	REPSOL	Spain

The above 13 oil products were tested for the general physical-chemical properties at Cedre.

#### From WP2 to WP3

A workshop (WS) 1-4 March 2021 marked the change of focus from WP2 to WP3. The WS was listed as Milestone 2 in the Project Application.

At the workshop the preferred 4 oils for full testing were identified and IMAROS established a follow up dialogue with the providers of those oils. Unfortunately, potentially due to unclear market trends and the time gap between the collection of small and large samples, not all providers could follow up with large samples of the very same product. We then specified what characteristics that had led to our interest and products with similar characteristics were offered. This means the oils from the initial tests WP2 testing will not all be the very same oil as we use for the full testing. However, this solution has been identified as the best alternative and we assess we will be able to assure data applicability by testing both the

original 13 samples and the follow-up samples in accordance with WP 3.1 and meet the project objectives.

At present the large samples are either underway or already received by the project and ready for the full testing.

### Deviation

In the project application it was envisaged the cut between WP 2 and WP3 would be a clear cut and the cut would be after selection of the oils for full testing and those oils would be received and paid for.

In reality the situation differs slightly and the transition has been gradual.

During WP2 we have conducted the initial physical and chemical testing (WP 3.1)

Formally, the workshop in March marked the change to WP 3. Since then the following three activities be to completed before WP 2 can be considered finalised:

- Follow up dialogue with industry to secure samples with the desired characteristics was completed afterwards. **Finalised:** The four samples are:

Sample	Nature	Provider	Pour Point (°C)	Viscosity, 50°C (mm <sup>2</sup> /s)	Tasks
#1	VLSFO	Stena Oil	+24	96	WP3: 3.2 to 3.5; WP4: 4.1 to 4.4
#2	VLSFO	Repsol	-18	245	WP3: 3.2 to 3.5; WP4: 4.1 to 4.4
#3	ULSFO	Shell	+30	not known	4.1
#4	VLSFO	Valletta Bunkers	+18	95	4.1

- The shipment of the four samples: **Ongoing.**
- Payment for samples. **Ongoing.** Paying awaits the receipt of invoices. Expect to be finalised no later than Q3/2021

Additionally it should be noted that IMAROS has included oil from the WAKASHIO accident in tests 3.1 and 3.2 as well as weathering tests for intercomparison. Unfortunately we do not have sufficient WAKASHIO-oil for recovery tests.

### COVID-19

COVID-19 has affected the project significantly.

The project was on track until spring 2020 when consequences of the COVID-19 started to cause friction. The dialogue with industry could not be face-to-face and interventions via mail took longer than it would in a world without COVID. Also bear in mind that industry had to handle the constantly changing oil market as a first priority before engaging in a dialogue with the project. WP 2 was planned to conclude by 28<sup>th</sup>. Formally it ended with the workshop 1-4 March 2021 and with the outstanding issues listed above. On the other hand the delay in WP2 has led to better preparation for WP3 and WP4.

**Closing remarks**

In summary it is the anticipation IMAROS will still be able to meet its' objectives expect to be finalised by 30 June 2022. Having said that, the unclear market trends until now as well as the consequential ongoing research in new low-sulphur oil products would speak for a follow-up to IMAROS project