D2.1 Relevant Pilot Database

Synergetics | Synergies for Green Transformation of Inland and Coastal Shipping

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Executive Summary

Within Task 2.1 of the SYNERGETICS project a Pilot Database containing pilots with a potential for the project to learn from and/or to interact with (e.g. a (high) learning potential) has been compiled. This report completes the main deliverable (type OTHER, provided in Excel format) and describes the process for developing the Database including its contents and results. The database contains at the moment (December 2023) 185 identified pilots. It has been validated by partners and stakeholders through a consultation and a specific workshop. Furthermore, an assessment has been made to see which of these pilots should be in focus of the SYNERGETICS partners in the framework of follow-up tasks Task 2.2 and Task 2.3. In three iteration rounds, SYNERGETICS partners and stakeholders have assessed all pilots. As a result, 87 pilots are marked with highest ranking as they seem to have a (very) high potential to learn from and/or to cooperate with in order to create synergies. Next, a total of 42 pilots was earmarked at a second ranking level, described as possibly interesting. Finally, the remaining 51 pilots on the list were found not to have sufficient potential for collaboration and/or to learn from in the coming years. Of the remaining 5 pilots, 4 are executed in the SYNERGETICS project and 1 was only found after the assessment was completed.

In the following tasks in Work Package 2 (Task 2.2 and Task 2.3), attention will be focused on drawing lessons from identified pilots in Task 2.1 following the ranking flowing from the assessment (as presented above). The Task 2.1 Pilot Database can be found here: https://www.synergetics-project.eu/wp-content/uploads/2023/12/T2.1_Pilot_Database_for_external_sharing_V2.0.xlsx

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1. | Introduction

Task 2.1 Inventory of Relevant Pilots has the mission to find potentially interesting pilots for SYNERGETICS to cooperate with and/or learn from with the aim to create synergies. The Grant Agreement (GA) describes the task as follows:

"Task 2.1: Inventory of relevant pilots [M1-M12]
Using desk research and the networks of the consortium partners, identify projects (EU-funded or not) that include relevant pilots (pilots on alternative propulsion options and energy-saving solutions). This should be focussed on ongoing and upcoming pilots, but past pilots should also be taken into account.
• Through desk-research, set-up a database with pilot projects, including such data as: start- and end date, pilot timeframe, type of alternative propulsion or energy-saving option to be tested, involved partners, location of the pilot, vessel type, how the vessel will be used during the pilot. EU and national R&D and funding programmes and European and national contact points (e.g. CORDIS, Dutch RVO) will be addressed to prepare a full overview. This will also take into account databases which already exist such as CCNR, H2020 projects STEERER and LASTING, and databases of EICB (e.g. made for EIBIP and Hydrogen Stocktaking Report for the Dutch Government (SPB leads, other partners to contribute);
• Get feedback on this database from all project partners in a project-wide workshop and include stakeholder input trough a stakeholder workshop. (SPB leads, other partners to contribute);
• Assess which pilot projects are most interesting to collaborate with or learn from. Get input from stakeholders on this in the above-mentioned workshop. (SPB leads, other partners to contribute).
Involved Partners: SPB (lead), DST, MARIN, CMB.TECH, SNAOS, KOE, TTS, ANLEG, CRS, FPS, MER, ZES, CFT"

The database as stated in GA was named the "Task 2.1 Pilot Database" and has been a product of joint decision and effort by all task partners. The database has been drafted, filled, evaluated, reworked and assessed within the task and input by stakeholders has been sought multiple times. The members of the SYNERGETICS Advisory Board have also been included in the evaluation and the assessment phases and some of them have contributed to the making of the database by delivering source materials.

Task 2.1 delivers a Pilot Database that has been assessed regarding the useability of the found pilots for further SYNERGETICS work. By means of an extensive assessment a ranking was made to select the pilots with the highest learning potential. Especially, for Tasks 2.2 and 2.3 the pilots which received the highest ranking will be the most relevant. These tasks in WP2 will follow up this work by interacting with the pilots that have been found in Task 2.1 and deemed to have a high learning potential in the assessment.

The Task 2.1 Pilot Database contains 185 entries (pilots found) which focus on alternative propulsion and/or energy efficiency in Inland Waterway Transport and Coastal shipping – the scope of SYNERGETICS. To the best of knowledge of the authors, this is the most comprehensive and up-to-date source of the greening activities in these two waterborne sectors.

The Pilot Database and this accompanying report is fully open and accessible for everybody to use and learn from. It is published on the website of SYNERGETICS[1]. Moreover, a scientific paper is also made for the TRA2024 in Dublin to raise attention for the work and the availability of the database. This paper is discussed in this deliverable as well.

[1] See: https://www.synergetics-project.eu/wp-content/uploads/2023/12/T2.1_Pilot_Database_for_external_sharing_V2.0.xlsx

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2. | Process description: making the database

Work on the Task 2.1 Pilot Database has taken roughly eleven months of duration. A description of the first phase of this work (the making of the database) is presented below. This part of the work has been done in the first semester of 2023.

2.1 Setting the scope

The SYNERGETICS project started on the 1st of January 2023 and the kick-off meeting was held in Duisburg in February 2023. During the kick-off meeting, a workshop has been held to determine with the partners the scope of the pilot database. The planning of this task was agreed upon after initial discussion in Duisburg and following iterations by email and during online meetings. Task 2.1 has a "soft" scope, where almost no strict borders are defined to make sure that areas of possible interest and synergy are not accidentally excluded. However, the search for pilots in the task was to be shaped after the answering of the following questions by the project partners.

- What is a pilot & when is it useful?
  - Pilots were defined as demonstrations performed on life-size vessels in real operation. However, if pilots that do not meet these criteria are found to have a high learning or synergy potential, they should not be excluded.
- Geographic boundaries for the database
  - It was decided not to include regional boundaries, but a focus should lie on finding pilot projects that report at least some of their results in English to be able to understand them without the need for translation.
- How to define coastal shipping, and how to address it in the database?
  - There are several definitions of "coastal shipping". Accordingly, different suggestions were made how to define coastal shipping, however no clear definition of coastal shipping for the project was decided upon during the kick-off meeting. It was decided that Task 2.1 should use the question *can we learn from it?* As a guiding principle. It followed that oceangoing vessels should be definitively excluded from the search, but that the short sea shipping vessels could be a part of a database, provided that the SYNERGETICS can learn from such pilots. Following this reasoning, it was adopted at the later stage, that "coastal ships" – in context of SYNERGETICS – comprise seagoing ships which operate in ports, along coastlines, between islands and in marginal seas.
- What timeframe is interesting (e.g., after 20xx?)
  - Again, a flexible scope was set. It was thought likely that more recent pilots would offer more to learn from, but also that failed pilots in the past might be very interesting (why did they fail?).
- What kind of developments are interesting, and what kind of developments not (after treatment, air cavities, anti-fouling)?
  - For energy saving solutions, SYNERGETICS' main focus will be on hydrodynamics. This means that air cavities and anti-fouling are not to be a main search area of Task 2.1 work.
  - After treatment in the traditional sense (e.g. in use behind a diesel engine) is to be excluded, but where aftertreatment is necessary for an alternative fuel in an ICE, it is to be included in the database.

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Concluding, it can be said that the project partners did not decide upon a strict scope, but a flexible one. This means that there is a clear focus area:

alternative propulsion or energy saving pilots on life-size vessels in real operation, world-wide, but not oceangoing, with a first focus on recent pilots

which allows to deviate attention to pilots that would be outside of a strict scope if they have learning potential for SYNERGETICS. The flexible scope is meant to be a "living scope", which can change over the course of the project lifetime. The mission for the task, as seen by the partners, can be paraphrased as "find as many potentially interesting pilots as possible".

2.2 Designing the database

In addition to the scope, it was deemed very important to determine before the work was started how the database should look like. It was decided that Excel was the only suitable option to use as a programme for storing the data found. Before the first workshop of the task in Duisburg, task leader SPB drafted the lay-out of the database regarding the organization and the contents.

These subjects were decided upon during the workshop in Duisburg.

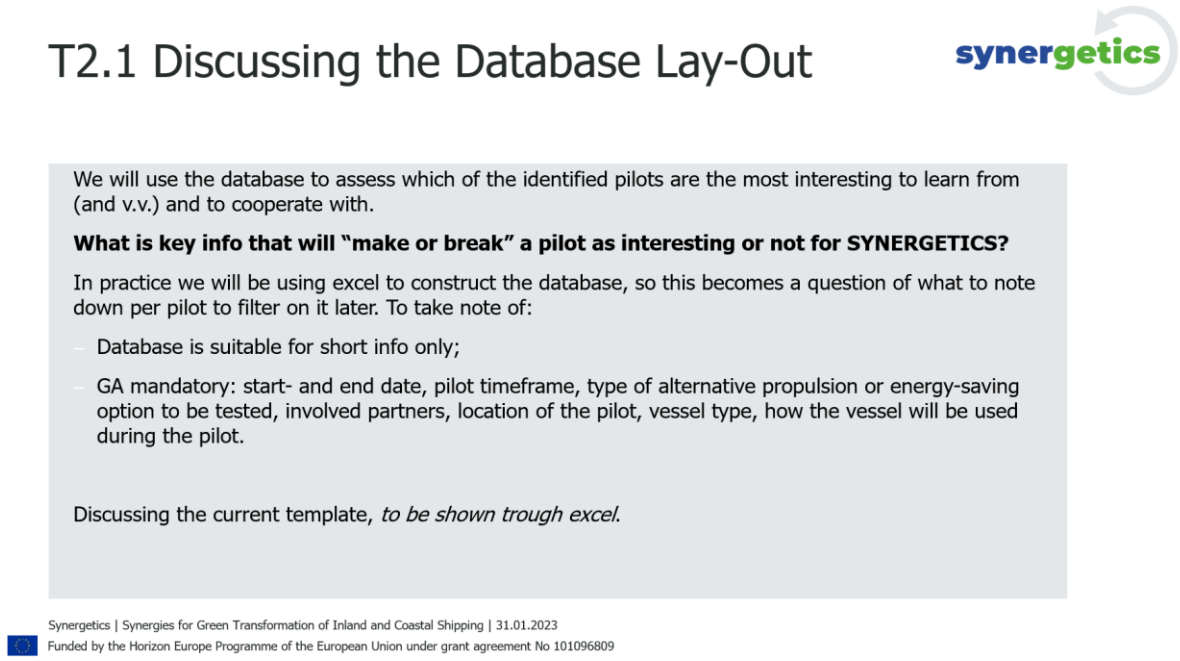

Figure 1: Slide presented during the Task 2.1 Workshop in Duisburg, for reference of the discussion.

TECHNICAL SPECS OF PILOT DEMONSTRATION							
VESSEL NAME	TYPE OF VESSEL	VESSEL USAGE DURING PILO	RETROFIT/NEWBUILD	INNOVATION TYPE	Type of Alt. Energy	Dual Fuel?	Type of on-board storage

Figure 2: The "Technical Specs of Pilot Demonstration" - a couple of columns from the database, presented in Duisburg. Later expanded upon.

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In the workshop, the lay-out of the (then still empty) database was shown as stated and feedback was gathered from the partners. Most of the discussions focussed on the part of the database known as Technical Specs of Pilot Demonstration, as can be seen in the figure above. Flowing from the discussions, a new column was added to designate a second type of alternative energy in case pilots used multiple types of alternative energy instead of just one.

Also, for a multitude of columns, it was decided to use a drop-down menu and disable freedom of notation. This to reach a more standardised filling of the database, leading to easier making of certain selections of pilots once it is filled. The categories chosen and their drop-down options can be seen below.

Type of energy	Type of bunkering	Learning potential	Retrofit/newbuild	Vessel usage during pilot
Hydrogen FC	Swappable container	Low	Retrofit	Fully operational
Hydrogen ICE	Charging	Mid	Newbuild	Dedicated testing trip(s)
Methanol FC	Bunkering	High		Partial
Methanol ICE				
Additional Battery				
LNG				
CNG				
Ammonia				
N/A				

Vessel type	Type of On-board Storage	Power installed	Dual Fuel
Large cabin vessel	Swappable Container	0-250 kW	Yes, Diesel
Push Boat <500 kW	Traditional fixed tank (Compressed)	250-500 kW	Yes, Other
Push Boat 500-2000 kW	Traditional fixed tank (Very-Low temp)	500-750 kW	No
Push Boat ≥2000 kW	Traditional fixed tank (Diesel-like storage	750-1000 kW	
Motorvessel dry cargo ≥110m	Fixed battery on board	1-2 MW	
Motorvessel liquid cargo ≥110r	Other exchangeable battery	2-4 MW	
Motorvessel dry cargo 80-109m		4>MW	
Motorvessel liquid cargo 80-109m			
Motorvessel <80m			
Coupled convoy			
Ferry			
Day trip and small cabin vessel			
Coastal Vessel (Tugboat)			
Coastal Vessel (Ferry)			
Coastal Vessel (Regular)			
Coastal Vessel (Off-Shore)			

Figure 3: Categories with drop-down lists.

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2.3 Sources

After setting the scope and getting to know which pilots were deemed interesting for SYNERGETICS and creating synergies, it was decided to continue the work in the task by gathering sources of potentially interesting pilots. Already in the proposal phase, a couple of sources were identified and specified in the Grant Agreement. Here, this list was expanded upon.

The following sources were considered for the first phase of finding pilots:

- CORDIS Database
- Dutch RVO (national subsidy provider) Database
- List of CCNR Derogations
- A relevant pilot list from the H2020 project Steerer
- An EU projects lists from the H2020 project Lasting
- Dutch Maritime Masterplan
- List of Dutch MIIP funded projects
- Earlier SPB List made around 2021 with a focus on hydrogen applications (in 2022 expanded for all greening pilots found at that time)

Apart from the list above, the project partners were asked for input and this delivered the task leader with some interesting publications on subjects like methanol in shipping, hydrogen applications on vessels et cetera.

After gathering sources for two weeks and ending up with the sources described above, it was decided to start with gathering the pilots.

2.4 Gathering pilots

As a first step in filling the database, the task leader SPB scrutinized the sources mentioned above to find potentially interesting pilots and fill the Pilot Database. This first round of gathering already led to close to one hundred entries (pilots) filled into the Pilot Database and was thus relatively successful.

However, after an internal check, the list was still heavily focussed on IWT in North-Western Europe (SPB is a Dutch organisation). Therefore, all other partners were asked to provide either additional sources or enter new pilots in the Database themselves. This led to a large inflow of Coastal Shipping pilots, pilots from Germany, France and some inflow of pilots in other parts of Europe and sometimes other continents.

Subsequently, the Pilot Database contained over 170 entries and no more unused sources or parties in the network were in sight.

2.5 Validation

At this point it was decided to get feedback on the current stance of the Database from partners and stakeholders by organizing a workshop. However, task leader SPB first did a thorough check for duplications, missing data and other issues and mistakes.

Early in the summer of 2023, partners and stakeholders had the opportunity to check the database. This led to some comments that could be integrated, some extra information found for certain pilots and again a small number of new pilots added to the list.

Furthermore, relevant SYNERGETICS partners were asked to scrutinize the entries for their pilots (either in or outside of SYNERGETICS) and this led to some extra interesting information and additional pilots.

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2.6 Final gathering round

After the validation was done, a final check on the "living" sources mentioned above – some of the sources update regularly with new projects – was carried out, which resulted in one additional pilot. Thus, at the moment of finalising the deliverable, the database contains 185 unique pilots. It should be noted that the Task 2.1 Pilot Database will be regularly updated and expanded during the lifetime of the project, giving the SYNERGETICS partners an opportunity to enter new pilots in the database.

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3. | Description of the results: the Pilot database

3.1 The Pilot database

After this final gathering round the Task 2.1 Pilot Database was 184 entries long, so 184 pilots were identified that had some relevance to SYNERGETICS. At the moment of writing in November 2023, one extra pilot was identified through a press-release published in relevant media at the end of the same month but no further entries were made.

Since the database has 29 columns, the excel file has become too large to adequately represent in a word file. Therefore, the file has been made available as a downloadable excel file on the SYNERGETICS website and can be accessed here: https://www.synergetics-project.eu/wp-content/uploads/2023/12/T2.1_Pilot_Database_for_external_sharing_V2.0.xlsx

In the figure below, the first twenty entries in the Task 2.1 Pilot Database have been shown to give the reader an overview and a general idea of what the database contains. For a better view on the database, please refer to the link mentioned above.

If one has a look at the entire database, it will fast become clear that not all cells have been filled for all entered pilots. Indeed, for some pilots almost no information could be found. Luckily, for most pilots a majority of the most important info could be found and thus the database is relatively well filled. If new information about a pilot becomes available, it can always be logged into the relevant sections of the database during the project lifetime (and after).

The Database presents a large amount of information on a large number of pilots. No similar database was found by the authors at the time of writing. It will both aid SYNERGETICS by enabling it to identify pilots it wants to cooperate with and learn from and it can be useful for policy purposes when looking at the information in the database and the lessons one can learn from that.

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Basic Info		PROJECT OF INTEREST			PILOT INFORMATION						
	FUNDING	PROJECT NAME	PROJECT COORDINATOR	START - END DATE PROJECT	LOCATION PILOT	Pilot Startdate	PILOT DURATION	PARTNER RESPONSIBLE	VESSEL NAME	TYPE OF VESSEL	VESSEL USAGE
1	National	Zero Emission Services - ZES	ZES	2020- no foreseen enddate	Alphen a/d Rijn - Moerdijk	2021	No foreseen enddate	CCT (owner ship and container ter	Alphenaar	Motorvessel dry cargo 80-109m	Fully operational
2	EU	Future Proof Shipping - FPS	FPS	2019- no foreseen enddate	Rotterdam - Meerhout	2023	No foreseen enddate	FPS	H2 Barge 1 (formerly	Motorvessel dry cargo ≥110m	Fully operational
3	EU	FLAGSHIPS	VTT	2019-2025	Paris	2024	min 18 months	CFT	Zulu06	Motorvessel <80m	Fully operational
4	EU	FLAGSHIPS	VTT	2019-2025	Rotterdam - Duisburg	2024	min 12 months	FPS	FPS Waal	Motorvessel dry cargo 80-109m	Fully operational
5	EU	H2SHIPS	EIFER	2019-2022	Port of Amsterdam	2024	?	Port of Amsterdam	Neo Orbis	Day trip and small cabin vessel	Fully operational
6	EU	RH2IWER	VTT	2023-2028	Rotterdam - Duisburg	1-11-2024	min 12 months	FPS	FPS Rijn	Motorvessel dry cargo ≥110m	Fully operational
7	EU	RH2IWER	VTT	2023-2028	Rotterdam-Antwerp-Gent	1-6-2023	min 24 months	DFDS	DFDS1	Motorvessel dry cargo ≥110m	Fully operational
8	EU	RH2IWER	VTT	2023-2028	Rotterdam - Duisburg (-Do	1-4-2026	min 12 months	FPS	FPS Margreta	Motorvessel dry cargo ≥110m	Fully operational
9	EU	RH2IWER	VTT	2023-2028	Utrecht - North NL	1-6-2024	min 24 months	Theo Pouw	PW 1	Motorvessel dry cargo 80-109m	Fully operational
10	EU	RH2IWER	VTT	2023-2028	Jemeppe (BE) - Antwerp	1-6-2024	min 24 months	VT Group	MTS Volendam	Motorvessel dry cargo 80-109m	Fully operational
11	EU	RH2IWER	VTT	2023-2028	Rotterdam - Duisburg	2025	2026-2027	CFT	Sogestran 1	Motorvessel liquid cargo ≥110m	Fully operational
12	EU	SYNERGETICS	DST	2023-2026	Port of Antwerp	2023	?	CMB.Tech	Hydrotug	Coastal Vessel (Tugboat)	Fully operational
13	EU	SYNERGETICS	DST	2023-2026	?	2025	?	Mercurius Shipbuilding	Stolt Ijssel	Motorvessel liquid cargo 80-109m	Fully operational
14	EU	SYNERGETICS	DST	2023-2026	Paris	2025	No foreseen enddate	CFT	Sandre	Motorvessel <80m	Fully operational
15	EU	SYNERGETICS	DST	2023-2026	?	2025	?	ZES	?	Motorvessel dry cargo ≥110m	Fully operational
16	Unknown	Crew Transfer	CMB.TECH	2020-?	Port of Antwerp	2020	ed, commercial operation	CMB.Tech	Hydrocat	Coastal Vessel (Off-Shore)	Fully operational
17	EU	H2Watt	Mariko	2020-?	Waddenzee	?	?	?	?	Coastal Vessel (Ferry)	
18	Unknown	Hydroville	CMB.TECH	2017-2018	Port of Antwerp	2017	?	CMB.Tech	Hydroville	Ferry	Fully operational
19	EU	ISHY	PoOostende	2019-2022	NL	2023	?	Zilvermeeuw	Zilvermeeuw Z9	Day trip and small cabin vessel	Fully operational
20	EU	ISHY	PoOostende	2019-2022	?	?	?	Vera Cruz / Yerseke Engine Service	Veracruz	Coupled convoy	

TECHNICAL SPECS OF PILOT DEMONSTRATION								Summary	ADDITIONAL INFO	
RETROFIT/NEWBUILD	INNOVATION TYPE	Type of Alt. Energy	2nd type of Alt. Energy	Dual Fuel?	Type of on-board storage	Alt. Power Installed	BUNKER METHOD	CONCLUSION	NOTES	Website
Retrofit	Elektrification	N/A	N/A	Yes, Diesel	Swappable Container	1-2 MW	Swappable container	Success	diesel gen-set as backup in case of too low	https://zeroemissionservices.nl/en/home>a
Retrofit	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	1-2 MW	Swappable container	Success	FPS = SYNERGETICS Partner	https://futureproofshipping.com/
Newbuild	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	250-500 kW	Swappable container	Unclear	CFT/Sogestran = SYNERGETICS Partner -	https://flagships.eu/about/
Retrofit	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	1-2 MW	Swappable container	Unclear, Vessel in yard	FPS = SYNERGETICS Partner	https://flagships.eu/about/
Newbuild	Alternative fuels	Hydrogen FC	Additional Battery	No	Traditional fixed tank (Diesel-like sto	0-250 kW	Bunkering	Unclear	Uses Sodium borohydride (NaBH4) as H2 Ca	https://www.nweurope.eu/projects/project-s
Retrofit	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	2-4 MW	Swappable container	Unclear	FPS = SYNERGETICS Partner	https://rh2iwer.eu/
Newbuild	Elektrification	N/A	Hydrogen FC	Yes, Other	Swappable Container	2-4 MW	Swappable container	Unclear	Vessel designed for battery & H2 containers	https://rh2iwer.eu/
Retrofit	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	1-2 MW	Swappable container	Unclear	FPS = SYNERGETICS Partner	https://rh2iwer.eu/
Newbuild	Alternative fuels	Hydrogen FC	N/A	No	Swappable Container	500-750 kW	Swappable container	Unclear	-	https://rh2iwer.eu/
Retrofit	Alternative fuels	Hydrogen FC	N/A	No	Swappable Container	1-2 MW	Swappable container	Unclear	-	https://rh2iwer.eu/
Newbuild	Alternative fuels	Hydrogen FC	Additional Battery	No	Swappable Container	1-2 MW	Swappable container	Unclear	CFT/Sogestran = SYNERGETICS Partner.	https://rh2iwer.eu/
Newbuild	Alternative fuels	Hydrogen ICE	N/A	Yes, Diesel	Traditional fixed tank (Compressed)	250-500 kW	Bunkering	Unclear	SYNERGETICS Pilot	www.synergetics-project.eu
Retrofit	Alternative fuels	Methanol ICE	N/A	Yes, Diesel	Traditional fixed tank (Diesel-like storage)		Bunkering	Unclear	SYNERGETICS Pilot	www.synergetics-project.eu
Retrofit	Elektrification	N/A	Additional Battery	Yes, Diesel	Fixed battery on board	500-750 kW	Charging	Unclear	SYNERGETICS Pilot - The Sandre is a cement	www.synergetics-project.eu
	Elektrification	N/A	N/A					Unclear	SYNERGETICS Pilot, the pilot under synerget	www.synergetics-project.eu
Newbuild	Alternative fuels	Hydrogen ICE	N/A	Yes, Diesel	Traditional fixed tank (Compressed)		Bunkering	Success	CMB = SYNERGETICS Partner	https://cmb.tech/nl/business-units/marine/h
	Alternative fuels	Hydrogen FC	N/A	No				Unclear	A lot of unknowns (interesting!)	https://h2watt.eu/nl/
Newbuild	Alternative fuels	Hydrogen ICE	N/A	Yes, Diesel	Traditional fixed tank (Compressed)		Bunkering	Success	CMB = SYNERGETICS Partner	https://cmb.tech/business-units/marine/hyd
Newbuild	Elektrification	N/A	N/A	No	Fixed battery on board	1-2 MW	Charging	Unclear	First target was hydrogen.	https://www.interreg2seas.eu/er
Retrofit	Alternative fuels	Hydrogen FC	Additional Battery	No				Failure?	Ship supposed to be inoperation end 2021.	https://www.interreg2seas.eu/en/ISHY or-t

Figure 4: Snapshot of the most relevant columns of the first 20 entries in the Task 2.1 Pilot Database. The snapshots are here presented below each other. In the database, the bottom snapshot is the rightward continuation of the upper one.

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3.2 The steps towards the dissemination of the Pilot Database

As it was considered that the database in its present state may already lead to valuable findings, it was decided to present the Task 2.1 Pilot Database in a paper titled "*Exploration and synchronization of greening of shipping by means of retrofit: The SYNERGETICS perspective*", which was co-authored by a group of SYNERGETICS partners involved in WP1 and WP2 and submitted to the Transport Research Arena conference to be held in 2024 (TRA 2024). With the paper, SYNERGETICS hopes to win the opportunity to present the project at the next year's TRA which would be a very relevant dissemination platform.

The paper showcases some of the possible ways of using the information given in the Pilot Database, by focusing on 165 vessels (115 inland vessels and 50 coastal ships) which, at the time, provided information sufficient for the intended analyses. The types of vessels included in the study are presented in Figure 5. This figure further shows the division of pilots over the different types of vessels in the Pilot Database. Interestingly, most of the pilots in inland navigation are implemented on small passenger ships ("day trip and small cabin vessels") and ferries (37% and 19% respectively), while the least number of pilots is conducted on push boats (8% considering all push boat categories). Ferries are one of the dominant categories among the coastal pilots as well (24%), but not as dominant as in the inland waterway transport.

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Figure 5: Types of inland vessels and coastal ships represented in the Pilot database used in the paper submitted to TRA 2024.

Another interesting insight provided by the database is the spread of the pilots over the different types of innovations present in the database: electrification of the main propulsion plant, the use of alternative fuels, and energy-efficiency measures. In the figure below, it can be seen that in Inland Waterway Transport, 52% of the identified pilots were focused on electrification, 45% on alternative fuels and 3% on energy-efficiency. In Coastal Shipping, alternative fuels pilots comprise 84% of the total, with electrification and energy-efficiency making up respectively 10% and 6%. The paper elaborates further on the possible reasons for the observed spreads over different innovation types. The popularity in IWT of electrification compared to the low number of similar pilots in coastal shipping might point to sector-specific differences being a key factor in the suitability of electrification for a vessel (e.g. in IWT, vessels might be expected to cover shorter distances compared to Coastal Shipping and are thus earlier suitable for electrification). The low popularity of energy-efficiency pilots in both sectors might also be explained by a range of reasons. One possibility being that in IWT a significant part of vessel owners gets reimbursed for fuel-costs by their customers. Being more efficient with their fuel will thus not mean extra benefits for them. However, a range of other explanations might be found.

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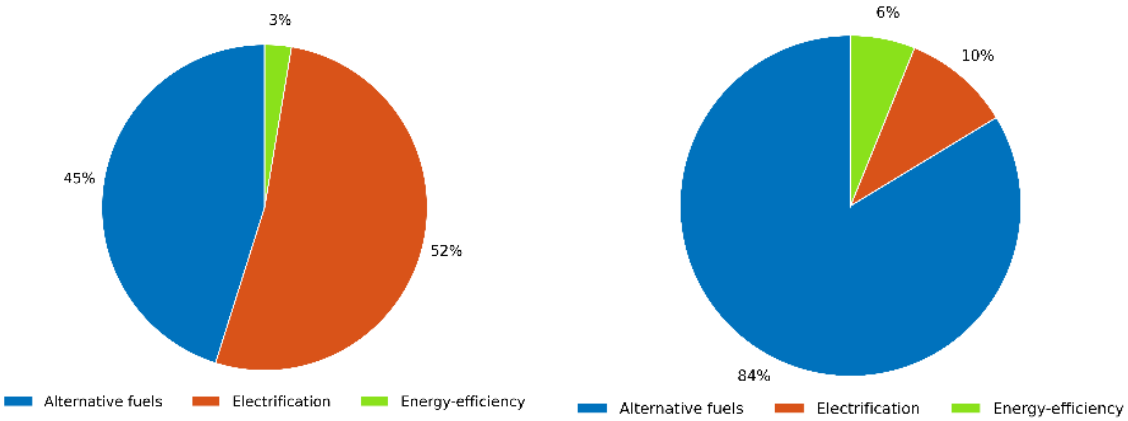

a) b)

Figure 6: Innovative technologies used in greening pilots on a) inland vessels and b) coastal ships.

For electrification pilots, the figure below shows the breakdown per vessel type in Inland Waterway Transport. In line with the possible explanation for the popularity of electrification pilots in IWT, it can be seen that a large part of electrification pilots has been held on day trip and small cabin vessels and ferries (50% and 30% respectively). As for the coastal ships, electrification pilots comprise only five ships, three out of which are ferries. Ferries and small cabin vessels are relatively small and cover smaller distances when compared to other types of vessels in both Coastal Shipping and Inland Waterway Transport.

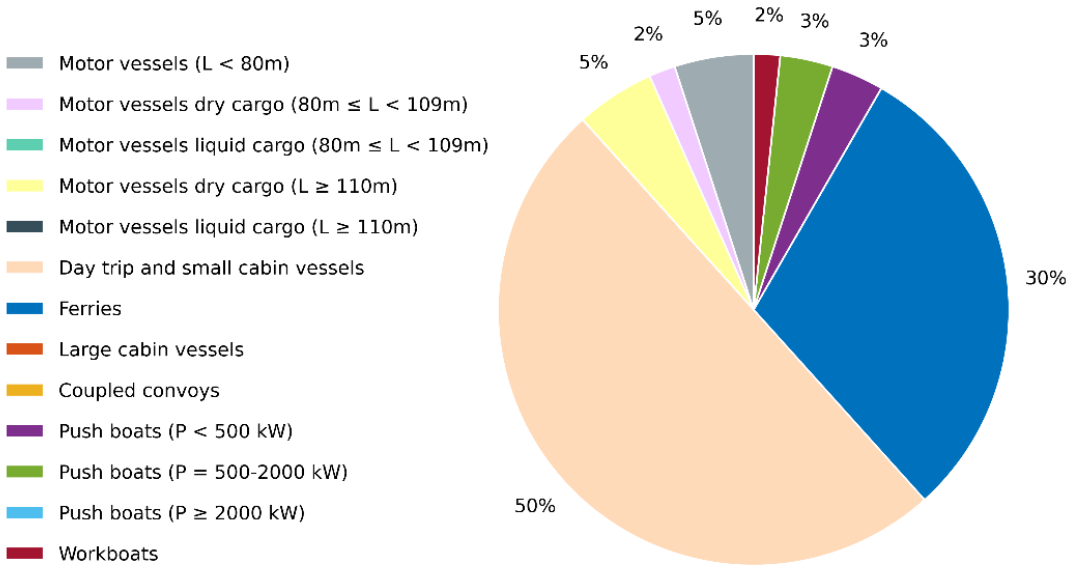

Figure 7: Electrification pilots on inland vessels; breakdown by ship type.

Alternative fuels are more equally spread across types of inland vessels as can be seen in figure 8 below. Notably, the self-propelled dry and liquid cargo vessels greater than 80 m in length comprise roughly 45% of the alternative fuel pilots. The use of alternative fuels is almost equally spread amongst the major coastal ship types (tugboats, offshore supply vessels, ferries, and cargo ships), see Fig. 9.

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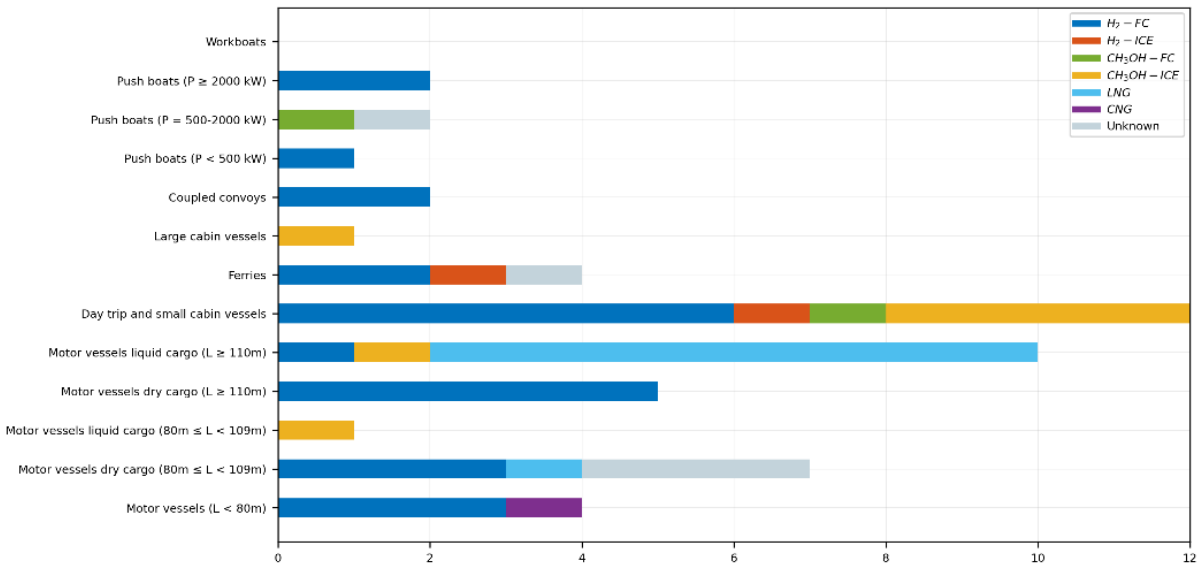

Figure 8: Alternative fuels pilots on inland vessels; breakdown by ship type and the type of alternative energy systems.

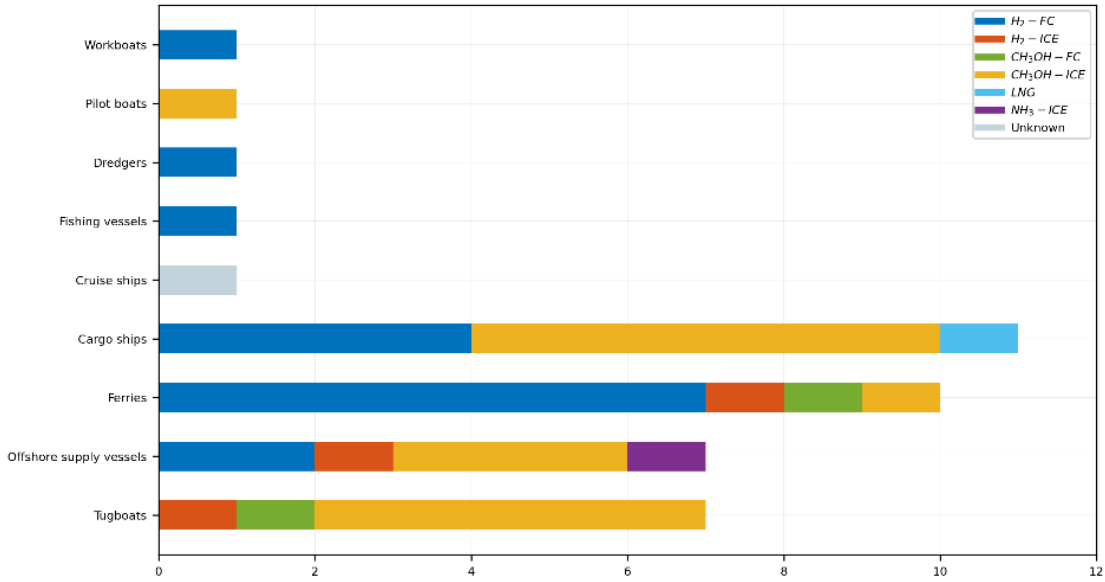

Figure 9: Alternative fuels pilots on coastal ships; breakdown by ship type and the type of alternative energy systems.

The Pilot Database allows for many further investigations, of which some have been included in the paper submitted to the 2024 TRA. One of the most interesting parts left to discuss here is the evolution of the greening efforts in terms of the pilots deployed over the years. Starting date of pilots in Inland Navigation and Coastal Shipping, further classified by the type of innovation used, can be seen in Figure 10 below. It may be noticed that the number of pilots significantly increases as of 2014. Interestingly, almost no coastal pilots were recorded until 2019. Unfortunately, it is difficult to ascertain the starting date of a considerable number of pilots which limits the veracity of the conclusions, in particular in case of coastal ships where number of unknown starting dates reaches almost half of the pilots.

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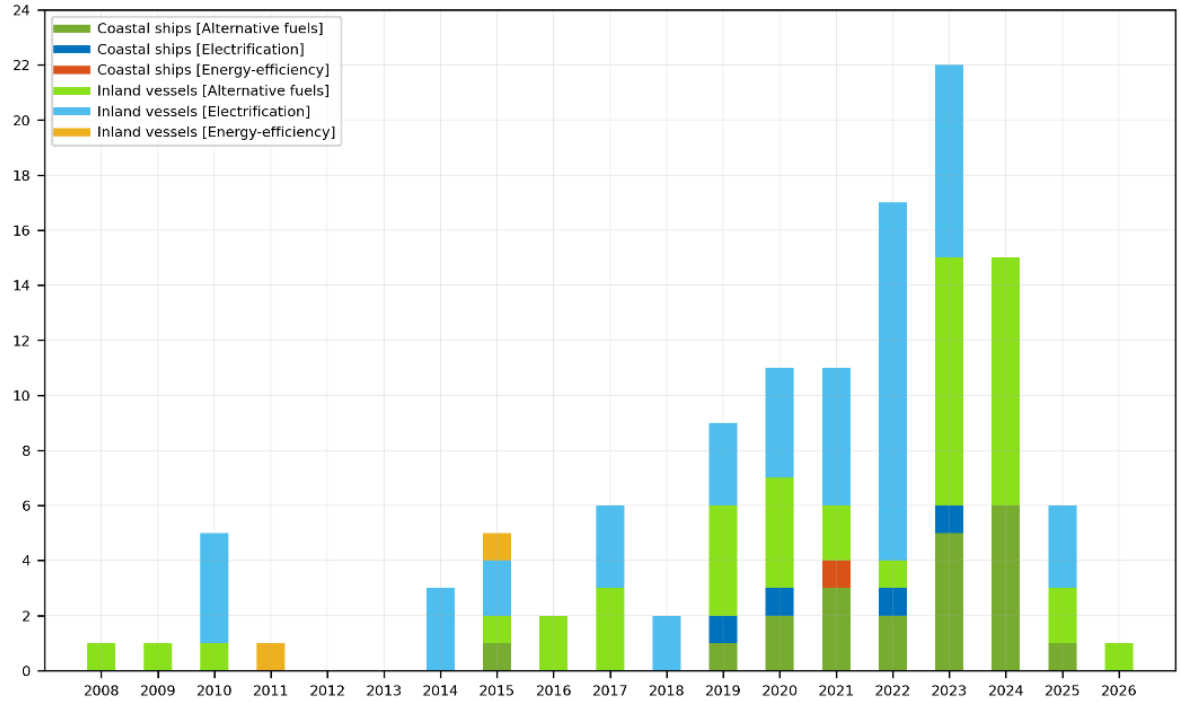

Figure 10: Starting date of the greening pilots on inland vessels and coastal ships

Finally, research for the paper showed that at least half of the pilots in coastal shipping and almost two thirds of pilots in inland navigation are realized on newbuilds, it may be concluded that the potentials of retrofit are still largely untapped. Thereby, the research for the paper confirms the importance of SYNERGETICS which focuses on potential of greening of ships by means of retrofit. Further, it is noted that the Pilot database registers the greening efforts, but does not quantify the level of greening attained, e.g., in terms of achieved emissions reduction. Assessing the achieved environmental performance of greening efforts in Inland Waterway Transport and Coastal Shipping remains the task for further research.

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4. | Assessment of the database

The data in the Database has been analysed and some results have been presented in chapter 3.2. However, the goal of Task 2.1 is to provide Task 2.2 and Task 2.3 with a list of interesting pilots for them to learn from and/or interact with.

Thus, the last part of this mission is an assessment of every pilot on the list to see if they are interesting enough for such an effort. The need for this assessment was foreseen in the Grant Agreement, as follows:

"Assess which pilot projects are most interesting to collaborate with or learn from. Get input from stakeholders on this in the above-mentioned workshop."

However, with 185 pilots found it is also the practical limit of the efforts within Task 2.2 and Task 2.3 that necessitate to narrow down the list to create a shortlist of most relevant pilots for SYNERGETICS. Task 2.2 and Task 2.3 will greatly benefit from this assessment since the added focus will allow for more effective and efficient learning from and interacting with the identified pilots to create synergies and mutual benefits.

4.1 Assessment by key partners

Since Work Package 2 will feed into the other SYNERGETICS Work Packages and thus lay the ground-work for some of the key project outcomes, it was deemed important that those doing the assessment had the entire SYNERGETICS work and scope in their minds while performing the assessment. Therefore, partners DST, VIA, MARIN and SPB, involved in Task 2.1, which are also the leaders of relevant Work Packages that need input from WP2, were asked to assess each pilot on the list on how high they deemed it's potential to collaborate with or learn from for SYNERGETICS.

Basically, the assessment entailed the answering of the question:

"Is the identified pilot interesting enough for future collaboration? Would the potential lessons learned be worth of getting in contact with the pilot operators?"

The assessing partners were given three options to answer this question:

- Yes – interesting to collaborate with or learn form. Task 2.2/2.3 to focus on this pilot.
- No – not interesting. Do not focus on this pilot.
- Maybe – might be interesting but has some other downsides. Focus only if the "Yes" options are exhausted.

Working with these three options both offered the option to direct Task 2.2 and Task 2.3 in their focus, but also makes sure not too many pilots are written off beforehand since the Maybe category might be tapped into if wanted/needed.

When each assessing partner had finished up its assessment, the results were displayed in the database allowing for an overview of the answers of the assessing partners per pilot. Task Leader SPB then went through the outcomes and counted the votes per pilot. The end result of the assessment was decided by counting the majority of yes/no/maybe votes of the assessing partners where a weighted majority system was used.

For instance:

- Yes, yes, no, no equals Maybe- since this is the average outcome of the votes;
- Yes, Maybe, Maybe, No also equals Maybe;
- Yes, yes, yes, no equals yes;
- Et cetera.

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This resulted in the following:

- Yes: 48
- Maybe: 73
- No: 59
- SYNERGETICS internal pilots[2] on the list: 4

As can be seen, almost sixty (59) pilots had been marked as not sufficiently interesting or relevant, sparing a lot of efforts in Task 2.2 and Task 2.3 which don't have to focus on these. Almost fifty pilots (48) were deemed interesting which also gives these WP2 tasks a decent pool of shortlisted pilots to work with. The 'Maybe' subset consisting of 73 pilots offers a back-up pool in case the 'Yes' pool is exhausted. However, these first assessment results still had to be validated.

4.2 Validation of the assessment

After this initial assessment, a workshop with partners and stakeholders was planned and held on November 15th, 2023. Here, the assessment was to be checked by other partners and stakeholders which received access to the assessment results a few weeks in advance to allow them the time to go through the results.

At the workshop, a clear case was made by attendees for a second iteration round and a way of counting votes that skewed more towards the positive votes of assessing partners.

First of all, a second iteration round was deemed interesting because in a number of cases there were outlying votes (for instance: three times no and one time yes) which were in the current file not motivated. Casters of these outlying votes, and any partner that had clear different views on how a pilot was assessed, were asked to provide additional information in support of their assessment. Doing so, the possible extra insights into a pilot of one partner would not be discounted.

The second comment from the validation meeting centred on pilot groups; some pilots shared a lot of specifics on the general level (for instance, many electrification pilots on ferries were found). These were interesting but should not all be taken into account because then they would heavily skew the further work of SYNERGETICS in some very specific directions (hydrogen or electrification on small cabin vessels was an example). The SYNERGETICS instead focusses on the entire IWT and Coastal Shipping sectors and has a technology-neutral view. This comment was incorporated as a recommendation for Task 2.2 and Task 2.3.

A third comment was the desire for some assessment criteria. Although it was recognised that assessing the Database was a subjective matter, the following criteria for this second assessment were set as a guideline:

- Technology: in scope or very interesting to learn from?
- Information: available? If not, very hard to learn from- yet might be worth the effort.
- Status: ended/ongoing/not-yet-started? All are in scope, but some will be harder to get in contact with.

Roughly two weeks' time was given to partners and stakeholders to state their extra comments and feedback.

[2] For reasons of completion of the Pilot Database, it was decided to also include pilots within SYNERGETICS itself. This small effort makes the list more useable for external partiers.

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4.3 Assessment results

After the above-mentioned period was over, task leader SPB again took stock of the comments and feedback. This led, as expected and desired in the validation meeting, to a more positive assessment of the pilots:

- Yes: 87
- Maybe: 42
- No: 51
- SYNERGETICS internal pilots on the list: 4

As can be seen, the number of pilots valued with a "yes" almost doubled. This is due to the fact that a significant number of comments was received in favour of pilots where the majority of the assessors had previously voted 'maybe' or 'no'. In practice, almost all of these comments led to the pilot being awarded the 'yes' value. The reasoning behind this is that SYNERGETICS needs to learn and/or cooperate with the pilots valued 'yes'. A SYNERGETICS partner insisting on the high learning potential of a pilot despite negative views of other partners was seen as proof that the pilot was important enough for at least a subset of the consortium which warrants a 'yes' value for that pilot.

This new grouping clearly gives more pilots to interact with and/or learn from, which lessens the chances that interesting pilots are discarded too early. However, with 51 pilots not to focus on and 42 to only focus on if the yes-group is exhausted, the level of workload of Task 2.2 and Task 2.3 seems to be acceptable and feasible.

The large sub-sets or groupings of similar pilots were also further investigated. It turned out that a number of pilots is conducted on vessels of limited size and thus limited costs of undertaking an innovative pilot. Ferries and Cabin Vessels within IWT were the largest groups, with especially ferries skewed towards electrification. A clear recommendation for Task 2.2 and Task 2.3 partners is to include the most relevant pilots out of these typical subgroups. However, since these vessels represent only a small amount of the IWT fleet and SYNERGETICS focuses on the entire IWT and Coastal Shipping sectors, they should not skew the work of SYNERGETICS too much in one direction. In other words, only a subset of these identified large groups in the database is needed to learn from and interact with.

The snapshot of the Task 2.1 Pilot Database below includes all pilots that have been assessed as interesting to be contacted for cooperation or to share lessons learned. The snapshot does exclude some less relevant columns in the database to safeguard some readability. The assessment results are also findable in the Task 2.1 Pilot Database downloadable from the SYNERGETICS website.

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	PROJECT OF INTEREST	PILOT INFORMATION			TECHNICAL SPECS OF PILOT DEMONSTRATION					Assessment
	PROJECT NAME	LOCATION PILOT	Pilot Startdate	PARTNER RESPONSIBLE	VESSEL NAME	INNOVATION TYPE	Type of Alt. Energy	Type of on-board storage	BUNKER METHOD	Cooperate/Learn From?
1	Zero Emission Services - ZES	Alphen a/d Rijn - Moerdijk	2021	CCT (owner ship and container ter	Alphenaar	Elektrification	N/A	Swappable Container	Swappable container	Yes
2	Future Proof Shipping - FPS	Rotterdam - Meerhout	2023	FPS	H2 Barge 1 (formerly	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
3	FLAGSHIPS	Paris	2024	CFT	Zulu06	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
4	FLAGSHIPS	Rotterdam - Duisburg	2024	FPS	FPS Waal	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
5	H2SHIPS	Port of Amsterdam	2024	Port of Amsterdam	Neo Orbis	Alternative fuels	Hydrogen FC	Traditional fixed tank (Diesel-like st	Bunkering	Yes
6	RH2IWER	Rotterdam - Duisburg	1-11-2024	FPS	FPS Rijn	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
7	RH2IWER	Rotterdam-Antwerp-Gent	1-6-2023	DFDS	DFDS1	Elektrification	N/A	Swappable Container	Swappable container	Yes
8	RH2IWER	Rotterdam - Duisburg (-Do	1-4-2026	FPS	FPS Margreta	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
9	RH2IWER	Utrecht - North NL	1-6-2024	Theo Pouw	PW 1	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
10	RH2IWER	Jemeppe (BE) - Antwerp	1-6-2024	VT Group	MTS Volendam	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
11	RH2IWER	Rotterdam - Duisburg	2025	CFT	Sogestran 1	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
16	Crew Transfer	Port of Antwerp	2020	CMB.Tech	Hydrocat	Alternative fuels	Hydrogen ICE	Traditional fixed tank (Compressed)	Bunkering	Yes
17	H2Watt	Waddenzee	?	?	?	Alternative fuels	Hydrogen FC			Yes
18	Hydroville	Port of Antwerp	2017	CMB.Tech	Hydroville	Alternative fuels	Hydrogen ICE	Traditional fixed tank (Compressed)	Bunkering	Yes
19	ISHY	NL	2023	Zilvermeeuw	Zilvermeeuw Z9	Elektrification	N/A	Fixed battery on board	Charging	Yes
20	ISHY	?	?	Vera Cruz / Yerseke Engine Service	Veracruz	Alternative fuels	Hydrogen FC			Yes
21	SeaShuttle	Norway	2025	Samskip	SeaShuttle 1 & 2	Alternative fuels	Hydrogen FC			Yes
23	WEVA	Netherlands	jun-23	Lenten Scheepvaart	Antonie	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
27	ELEKTRA	Germany	2021	Ballard/Anleg/EST-Floattech	ELEKTRA	Alternative fuels	Hydrogen FC	Traditional fixed tank (Compressed)	Swappable container	Yes
28	SHipFC	?	jan-24	Eidesvik	Viking Energy	Alternative fuels	Ammonia	Traditional fixed tank (Compressed)		Yes
29	Zemships	Hamburg	2008	?	FCS Alsterwasser	Alternative fuels	Hydrogen FC		Bunkering	Yes
30	Fuel Cell Boat	Amsterdam	2009	?	Nemo H2	Alternative fuels	Hydrogen FC	Traditional fixed tank (Compressed)	Bunkering	Yes
31	Hydra	Norway	2023	Norled	Hydra	Alternative fuels	Hydrogen FC	Traditional fixed tank (Compressed)	Bunkering	Yes
32	NCE Maritime Cleantech // Tram	Norway	2022	Kolumbus	MS Medstraum	Elektrification	N/A	Fixed battery on board	Charging	Yes
33	Havila	Norway	2020	Havila	Havila Capella Cruis	Alternative fuels	Additional Battery	Fixed battery on board	Charging	Yes
35	Maranda	?	2019	?	Aranda	Alternative fuels	Hydrogen FC		Bunkering	Yes
36	HySeasIII	Orkney Islands	2021	Orkney Island Council	HyDra	Alternative fuels	Hydrogen FC			Yes
42	Marigreen	Netherlands	2017	Maritieme Academie Harlingen	EMELI	Alternative fuels	Hydrogen FC	Traditional fixed tank (Compressed)	Bunkering	Yes
44	AB Initio	Netherlands	2022	STC	Ab Initio	Elektrification		Fixed battery on board	Charging	Yes
45	Citybarge / Current Direct	Netherlands	2019	Kotug	E-Pushers	Elektrification	N/A			Yes
46	Sendo Liner	Netherlands	2020	Sendo Liner	Sendo Liner	Elektrification	N/A	Fixed battery on board	Charging	Yes
47	Jpnh2ydro	Japan	2021	TFC/CMB	HydroBingo	Alternative fuels	Hydrogen ICE		Charging	Yes
48	Fastwater	Sweden	2021	SMA	Pilot Boat	Alternative fuels	Methanol ICE	Traditional fixed tank (Diesel-like st	Bunkering	Yes
49	Fastwater	Belgium	Unclear, NYS	Port of Antwerp	Harbour Tug (double	Alternative fuels	Methanol ICE			Yes
50	NZK Ferries	Amsterdam	2021-2023	GVB Amsterdam	NZK Series Ferries	Elektrification	N/A	Fixed battery on board	Charging	Yes
51	Narvik Workboat	Narvik	2023-?	Port of Narvik	Narvik Workboat	Alternative fuels	Hydrogen FC			Yes
57	HYPush	France	?	NEoT Green Mobility	HYPush	Alternative fuels	Hydrogen FC			Yes
64	MIIP009 Optimalisatie Wind Assist	Netherlands	2022	Van Dam Shipping	MV Ankie	Energy efficiency	N/A			Yes
65	Staaltransport Tata/Van Dam	Coastal NL-Spain	2024	Van Dam Shipping	Staaltransport?	Alternative fuels	Hydrogen FC			Yes
67	Joy Hydrogen	?	2023	Vertom	Joy Hydrogen	Alternative Fuels	Hydrogen FC			Yes
71	Vox Maxima Sleephopperzuiger	?	?	Van Oord	Vox Maxima	Alternative fuels	Methanol ICE			Yes
72	Chemicaliëntanker	?	?	Unibarge	MS Chicago	Alternative fuels	Methanol ICE			Yes
74	MENENS	Netherlands	2023	Fugro	Fugro Pioneer	Alternative fuels	Methanol ICE			Yes
76	Laeso Ferry	Denmark - Laeso	2024-2025	Laeso Municiplity	Margrete Laeso	Alternative fuels	Methanol FC			Yes
79	Uthorn	Germany - Helgoland	2022	Alfred Wegener Institute	Uthorn	Alternative fuels	Methanol ICE			Yes
81	GKP7H2	Norway	2018	Hub for Ocean / OHC	GKP7H2	Alternative fuels	Hydrogen FC		Bunkering	Yes
82	HYSHIP	Norway	2024-2025		Topeka	Alternative fuels	Hydrogen FC			Yes
84	Eferry	Denmark	2019	?	Ellen	Elektrification	Additional Battery	Fixed battery on board	Charging	Yes
86	HTS/MTS Wasserstoffschiff	Germany	Q4 2023	HTS/MTS	HTS/MTS Wasserstof	Alternative fuels	Hydrogen FC			Yes
87	Rhenus Mannheim	Germany	Q4 2023	Rhenus	Rhenus Mannheim	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	Yes
98	Leanships	?	2018	?						Yes

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99	HyEkoTank	?	?	?	EK Stream	Alternative fuels	Hydrogen FC	Swappable Container	Swappable container	*Yes*
101	Grundlagen alternative Antriebsforme	Austria/Danube	3. quarter 2023	VIA	Bad Deutsch-Altenbu	Alternative fuels		Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
102	Grüne Hauptstadt Europas – Essen 201	Lake Baldeney	2017	DST	MS Innogy	Alternative fuels	Hydrogen FC	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
103		Lake Baldeney	2021	DST	MS Westenergie	Elektrification	Additional Battery	Fixed battery on board	Bunkering	*Yes*
104		Lake Baldeney	2022	DST	Stadt Essen	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
105		Lake Baldeney	2022	DST	MS Baldeney	Elektrification	Additional Battery	Fixed battery on board		*Yes*
107		Rursee	2018	DST	St. Nikolaus	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
108	Oberbillig Ferry	Mosel	2017	DST	Sankta Maria 2	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
109		Rhine	aug 2015	DST	Rhenus Duisburg	Energy efficiency	N/A	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
110		Alpherium	2019	?	MS For-Ever	Alternative fuels	N/A	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
111		Germany	apr-16	DST	MS Wissenschaft/MS	Alternative fuels	N/A	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
113		Emden-Borkum	2015	DST	MS Ostfriesland	Alternative fuels	N/A	Fixed battery on board	Bunkering	*Yes*
118		Danube	?	DST	Donauprinzessin	Alternative fuels	Hydrogen ICE	Traditional fixed tank (Compressed)	Bunkering	*Yes*
123	Eiger	Rhine	2020	DST	Eiger	Alternative fuels	N/A	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
124	Fastwater	Oxelösund	2021	?	120 SE	Alternative fuels	Methanol ICE	Traditional fixed tank (Diesel-like sto	Bunkering	*Yes*
126		Schlei	2023	DST	Missunde III	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
129	N/A	?	2023		-	Alternative fuels	Methanol ICE			*Yes*
130	Fastwater	?	Q1 → Q4 2023		Coast guard vessel	Alternative fuels	Methanol ICE			*Yes*
131	Fastwater	?	?		River cruise ship	Alternative fuels	Methanol ICE			*Yes*
133	N/A	?	2025		Tug boat	Alternative fuels	Methanol FC			*Yes*
138	E-Spatz	Duisburg	2023	DST	Mülheim	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
139		Passau, Danube	2022	DST	SUNliner	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
150		Kiel	2022	DST	MS Wellingdorf	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
151		Kiel	2020	DST	MS Düsternbrook	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
152		Kiel	2022	DST	MS Friedrichsort	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
153		Kiel	2020	DST	MS Wik	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
154		Kiel	2020	DST	MS Gaarden	Elektrification	Additional Battery	Fixed battery on board	Charging	*Yes*
172	HyMethShip	Austria/Danube	2021	LEC	HyMethShip	Alternative fuels	Hydrogen ICE		Bunkering	*Yes*
174	Sirocco Dual/Fuel/Diesel/LNG	Luxembourg	2014	Chemgas Barging	Sirocco	Alternative fuels	LNG	Traditional fixed tank (Compressed)	Bunkering	*Yes*
176	Electric Eel	Lithuania	?	?	Electric Eel	Elektrification	N/A	Other exchangeable battery	Swappable container	*Yes*
179	Ecotanker	Netherlands	2010	?	Ecotanker (1+2)	Alternative fuels	LNG		Bunkering	*Yes*
181	Parsifal Tankers	Netherlands	2021	DAMEN	Parsifal Tankers (1-2	Alternative fuels	LNG	Traditional fixed tank (Very-Low tem	Bunkering	*Yes*
182	Kotug M-Pusher	Netherlands	2023	Kotug	E-pusher Type M	Elektrification		Swappable Container	Swappable container	*Yes*
184	Veka Duel Fuel LNG Tankers	Netherlands	2017	VEKA	RPG Vessels (Stuttgar	Alternative fuels	LNG	Traditional fixed tank (Very-Low tem	Bunkering	*Yes*

Figure 11: An overview of the 87 yes-valued pilots is presented on this page and the one above. For visibility reasons, not all columns are included.

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5. | Conclusion

A host of information has already been gathered by compiling the Task 2.1 Pilot Database, as was proven by the results presented in Chapter 3.2. However, the work in WP2 will continue with Task 2.2 and 2.3 that have the goal to learn from and interact with past, present and future pilots. To achieve this goal, it is of importance that possibly interesting pilots have been identified - which is exactly what Task 2.1 has delivered with the Task 2.1 Pilot Database including 185 pilots (at the moment of finalising this deliverable, being mid December 2023).

The large number of pilots found further necessitated an assessment which pilots are the most interesting to learn from and interact with to develop synergies by means of collaboration and exchange of information. The identified pilots can benefit from the SYNERGETICS network, knowledge and communication and dissemination actions. This assessment was done and validated at the end of the Task 2.1 lifetime and has led to a clear focus for Task 2.2 and Task 2.3 to start their work. The final assessment results were as follows:

- Yes (high learning potential): 87
- Maybe (possible learning potential): 42
- No (little learning potential): 51
- SYNERGETICS internal pilots on the list: 4

While executing their task descriptions following the Grant Agreement and using the Task 2.1 Pilot Database, Task 2.2 and Task 2.3 partners should be aware of the large subgroups in the database of some types of pilots. These larger subgroups deserve significant attention but should not be allowed to skew the work of these tasks away from the overall scope of SYNERGETICS (the total IWT and Coastal Shipping sectors).

It has been noted in this deliverable that the database remains a living document. This was proven already, since the database at the moment of writing contains 185 entries. The 185th pilot was found after the assessment was completed; it was therefore not assessed. However, Task 2.2 and Task 2.3 can decide whether or not to focus on it. The assessment done in Task 2.1 will provide these tasks with an example of how to assess the learning potential of this pilot and any other newly identified pilots.

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