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**Coordination and Support Action**  
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**CONNECTING SCIENCE WITH SOCIETY**

Deliverable No. D3.4  
Survey of polar commercial infrastructure

## Submission of Deliverable

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Deliverable no. & title	D 3.4 Survey of polar commercial infrastructure
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Lead Beneficiary	WOC (partner 21)
Contributors	<input type="checkbox"/> 1 – AWI, <input type="checkbox"/> 2 – CNRS, <input type="checkbox"/> 3 - NERC-BAS, <input type="checkbox"/> 4 - CNR-DTA, <input type="checkbox"/> 5 – SPRS, <input type="checkbox"/> 6 – IPEV, <input type="checkbox"/> 7 - IGOT-UL, <input type="checkbox"/> 8 – RUG, <input type="checkbox"/> 9 - RCN, <input type="checkbox"/> 10 – MINECO, <input type="checkbox"/> 11 – CSIC, <input type="checkbox"/> 12 - UW-APRI, <input type="checkbox"/> 13 – BAI, <input type="checkbox"/> 14 – GEUS, <input type="checkbox"/> 15 – VUB, <input type="checkbox"/> 16 – UOULU, <input type="checkbox"/> 17 – RBINS, <input type="checkbox"/> 18 - IGF PAS, <input type="checkbox"/> 19 - IG-TUT, <input type="checkbox"/> 20 – AMAP, <input type="checkbox"/> 21 – WOC, <input type="checkbox"/> 22 - GINR
Due date	30.06.2017
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## EXECUTIVE SUMMARY

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**EU-PolarNet** is the world’s largest consortium of expertise and infrastructure for polar research. An important objective of EU-PolarNet is **to initiate, conduct and sustain an on-going dialogue and cooperation with all relevant stakeholders for the Polar Regions, including** business and industry sectors.

**The World Ocean Council (WOC)** is the international multi-industry business leadership alliance on ocean sustainability, science and stewardship, i.e. Corporate Ocean Responsibility.

The WOC and EU-PolarNet worked together on a **“Survey of polar commercial infrastructure” aiming at the “Identification of polar commercial infrastructures that could be made available to implement the Polar Research Programme”**.

Survey Outreach sum up:

- Launched 12<sup>th</sup> December 2016
- Closed 24<sup>th</sup> March 2017
- 67 responses

Survey outreach channels:

- **35,000 persons** were reached through WOC News Release (12/12/2016)
- **+500 persons** were reached through WOC social media platforms (from 12/12/2016 to 31/02/2017)

The survey has largely gathered information on collaboration between the business community and the scientific community regarding data collection in Polar Regions. It has established the first contact in a larger interaction between industry and research for an efficient use of existing infrastructure for research projects. It represents a unique opportunity to switch research budgets normally allocated to bespoke infrastructure to an efficient data collection based on collaboration, leading to a reduced need for bespoke infrastructure and a better use of the current resources.

The survey showed good results.

- 43 respondents added precise information about the vessels they operate, their characteristics and their qualities.
- 41 respondents indicated their routes in the Polar Regions and the seasons, allowing us to follow them closely.
- 29 respondents provided contact details for further collaboration.

This was a crucial step to develop fruitful collaborations and positive word-of-mouth in the Polar business community. The resulting cooperation should be successful to enable the scientific community to further reach out to the industry and enhance the dialogue.

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## INTRODUCTION

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**EU-PolarNet** is the world's largest consortium of expertise and infrastructure for polar research. Seventeen countries are represented by 22 of Europe's internationally-respected multi-disciplinary research institutions.

From 2015-2020, EU-PolarNet will develop and deliver a strategic framework and mechanisms to prioritize science, optimize the use of polar infrastructure, and broker new partnerships that will lead to the co-design of polar research projects that deliver tangible benefits for society.

An important objective of EU-PolarNet is **to initiate, conduct and sustain an on-going dialogue and cooperation with all relevant stakeholders for the Polar Regions**, including parliaments and policy, local inhabitants, polar organizations, international networks and agencies and business and industry sectors.

EU-PolarNet is establishing an on-going dialogue between policy-makers, business and industry leaders, local communities and scientists to increase mutual understanding and identify new ways of working that will deliver economic and societal benefits.

**The World Ocean Council (WOC)** is the international multi-industry business leadership alliance on ocean sustainability, science and stewardship, i.e. Corporate Ocean Responsibility.

The WOC brings together industries that use the oceans to catalyze global leadership and collaboration in addressing cross-cutting issues in support of improved business, continued access and reduced risk.

WOC Members include a growing number of companies from: shipping, shipbuilding, offshore oil/gas, marine technology and data management, fishing/seafood, seabed mining, mining, offshore renewable energy, submarine cable, and other companies from these and a range of other sectors. With the growing use of marine areas by an increasing variety of commercial interests there are increasingly complex risks from environmental impacts and conflicts in the use of marine space and resources. **The best efforts by a single company or whole industry sector will not be able to address the cumulative environmental impacts of the growing array of ocean industry operators. Hence the industry is open to cooperation with the research community.**

## QUESTIONNAIRE SCOPE AND CONTENT

### **Work Package 3: Infrastructures, Facilities, and Data**

WP3 will design a resource-oriented European infrastructure access and usage plan for the Integrated Polar Research Programme. This involves publishing a European Polar infrastructure catalogue, compiling existing space assets, as well as setting up a database of polar commercial infrastructures. In the course of this, WP3 will publish a white paper on European polar infrastructure access and interoperability and an infrastructure implementation plan. WP3 will further work towards a coordinated European polar research data infrastructure and improve open access to quality-controlled data.

The task T3.1 is named “Polar Platforms: research ships, stations, aircraft and autonomous instrumentation”. The World Ocean Council is one of the partners of this task, under the lead of Yves Frenot, IPEV and Gonçalo Vieira, IGOT-UL.

**The Deliverable D3.4 is a “Survey of polar commercial infrastructure” aiming at the “Identification of polar commercial infrastructures that could be made available to implement the Polar Research Programme”.**

This survey has been conducted to gather information on collaboration between the business community and the scientific community regarding data collection in Polar Regions.

## WHAT WAS ASKED FOR?

The questionnaire has been structured as follows:

### I. General information

1. Name of your company/organization
2. Main sector of your company/organization
3. How many vessels do you operate that sail in Polar regions (including vessels that sometimes sail in Polar regions)
4. Vessels' characteristics
5. Average passenger capacity for each ship type

### II. Routes details

6. Which areas of the Polar regions do your vessels frequent and how many times per year?
7. What time of year do you visit these Polar regions?

### III. Collaboration

8. If all liability and insurance issues can be dealt with by the science partner, would your fleet be interested, and able to: carry scientific passengers to and from research stations, deploy ocean observational equipment (e.g. Argos float / buoys), have remote sensing equipment fitted to the ship (e.g. remote sensing instruments)?
9. If you are able to provide any of these services, who would be the contact to explore this further?
10. If you are able to provide any of these services (e.g. hosting or deploying instruments, hosting scientists), what would be your expected recovery of the associated costs?

## WHO WAS ASKED TO RESPOND TO THE QUESTIONNAIRE?

### Outreach overview:

- Launched 12<sup>th</sup> December 2016
- Closed 24<sup>th</sup> March 2017
- 67 responses

### Survey outreach channels:

- **35,000 persons** reached through WOC News Release (12/12/2016)
- **+500 persons** reached through WOC social media platforms (from 12/12/2016 to 31/02/2017)
- 115 persons **contacted individually by WOC Secretariat**, including personally by Paul Holthus, WOC CEO

The World Ocean Council was in charge of gathering answers for the survey. The WOC aimed for an ambitious goal of 60 answers from 10 different sectors.

The first step has been a News Release (cf Annex C), to the ocean business community, and outreach through social media posts. This News Release has been to 35,000 persons on 12 December 2016 and WOC estimated the direct social media impact to +500 persons (+200 on Twitter by WOC and +300 on Linked In by WOC). This estimation doesn't take into account the possible shares. It led to 11 answers, these were limited in terms of sector representation.

After this first step, WOC started an individual outreach, by emails, to personal contacts of the organization, major decision makers of the business community. 115 persons **contacted individually by WOC Secretariat**, including personally by Paul Holthus, WOC CEO.

Among these personal contacts, there were more than **20 professional networks and associations directors and CEOs**, who spread the word to their own networks to optimize participation to the survey.

## Conclusion

The WOC individual outreach had the best performance rate (24% of the WOC individual outreach lead to a survey answer). The answers linked with this outreach were high quality answers (most if not all the questions were answered and high levels of detail were shared).

Individual outreach was most efficient and most valuable.

Thanks to a targeted personal outreach to many different sectors, the WOC obtained 67 answers from 13 sectors according to the survey sector categories. The WOC network has been the key element of this outreach and of the representativeness of all sectors, all countries and all sizes of companies' answers.

The process built by the WOC for the outreach is based on a targeted list of personal contacts and a systematic outreach and follow up.

## QUESTIONNAIRE HIGHLIGHTS

### Number of answers

The questionnaire counts 61 completed answers. Indeed, we had overall 67 but 6 of them did not fill in any questions or were used as test by partners (the name “test” being given as the name of the company).

### Sectors

*Table 1. Survey respondents' sector*

Survey Results Total	Percentage	61
Commercial	10%	6
Container	10%	6
Cruise/tourism	34%	21
Ferry	0%	0
Fishing	7%	4
Fisheries/resources management	0%	0
Government	3%	2
Information Technology/Mapping	3%	2
Medical/mercy	0%	0
Military	2%	1
NGOs	3%	2
Offshore Oil and Gas Vessels	5%	3
Others	1%	1
Private Research	5%	3
Research	13%	8
Surveillance, enforcement	3%	2

We can summarise:

- 43 respondents added precise information about their vessels
- 41 indicated their routes in the Polar Regions and the seasons, allowing us to follow them closely.
- 29 indicated some contacts for further collaboration.

### Collaboration opportunities

32 answered positively to the question “If all liability and insurance issues can be dealt with by the science partner, would your fleet be interested, and able to: carry scientific passengers to and from research stations, deploy ocean observational equipment (e.g. Argos float / buoys) and have remote sensing equipment fitted to the ship (e.g. remote sensing instruments)”. 4 of them

represent the containers and shipping sector, 18 the cruise/tourism sector, 2 the fishing sector, 1 the Oil & Gas industry and 7 the research sector.

### Company Size

The term size is associated with the number of employees of the company. Such a question did not figure in the questionnaire but data has been collected through online research to provide an estimation of the different sizes of companies responding to the questionnaire.

The information about the company size is available for 55 companies.

- 22 companies have fewer than 50 employees (11 in the cruise sector and 4 in the commercial sector).
- 8 companies have between 51 and 200 employees (mostly in the cruise sector).
- 7 are large size companies, with 201 to 1000 employees (3 in the research sector, 2 in the container sector and 2 in the cruise sector).
- 10 companies are big companies with over 1000 employees (3 in the cruise sector, 3 in the oil and gas sector and 2 in the container sector).
- The remaining companies are either networks or clusters (mostly in the research, NGO or fishing sectors).

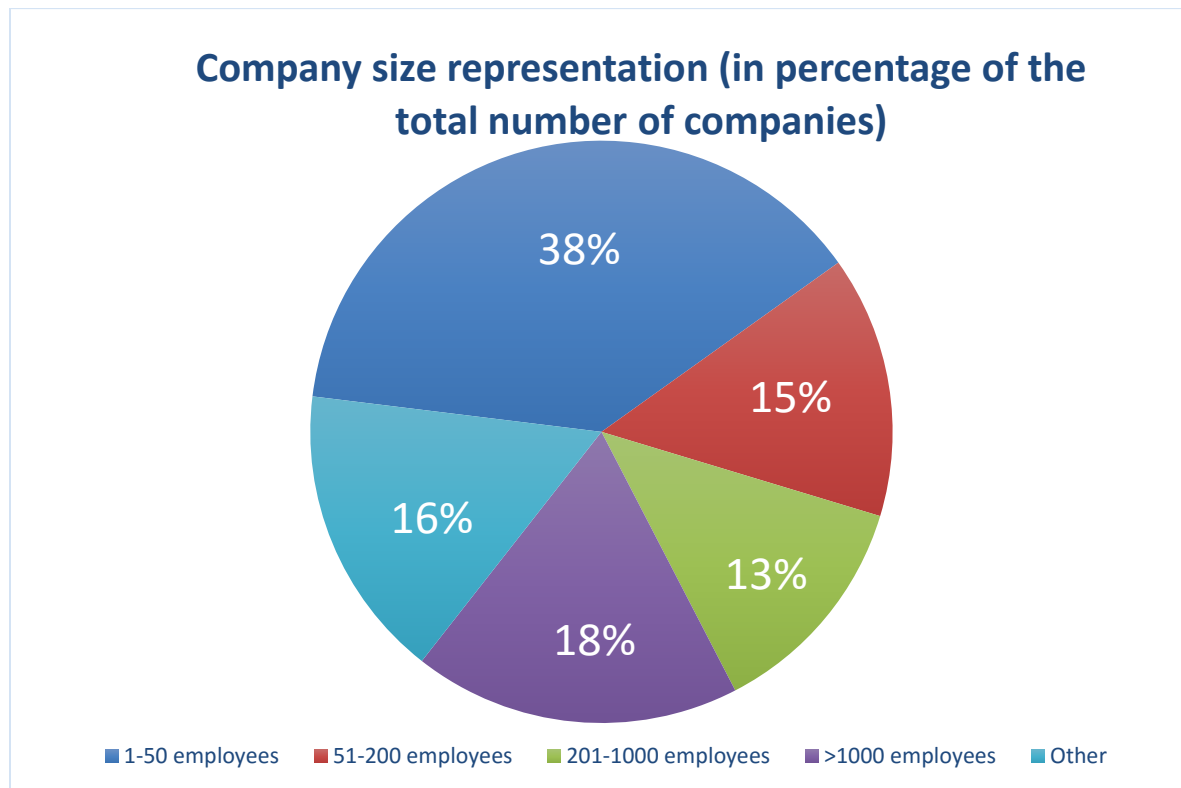


Fig. 1. Survey Respondent Companies size

Among respondents, the following are large and big companies (i.e more than 200 employees; numbers of employees according to their Linked In page):



Table 2. Biggest Companies which answered the survey

Company name	Number of employees
Plantour Kreuzfahrten	201-1000
Tauck	201-500
OGS	201-500
Wallenius Marine AB	501-1000
Norden	501-1000
National Institute of Water and Atmospheric Research	501-1000
Oldendorff Carriers	1001-5000
Abercrombie & Kent, USA	1001-5000
Seabourn Cruise Line Ltd	1001-5000
Hurtigruten AS	1001-5000
Royal Greenland	1001-5000
Esri	1001-5000
Crowley Maritime Corporation	5001-10000
Technip	+ 10001
GeCon	+ 10001
Statoil	+ 10001

**Geographical Distribution**

Respondents did not have to provide any data about their company’s domiciliation. For a better understanding and overview of the survey results, we connected the respondent companies to the country hosting their headquarters.

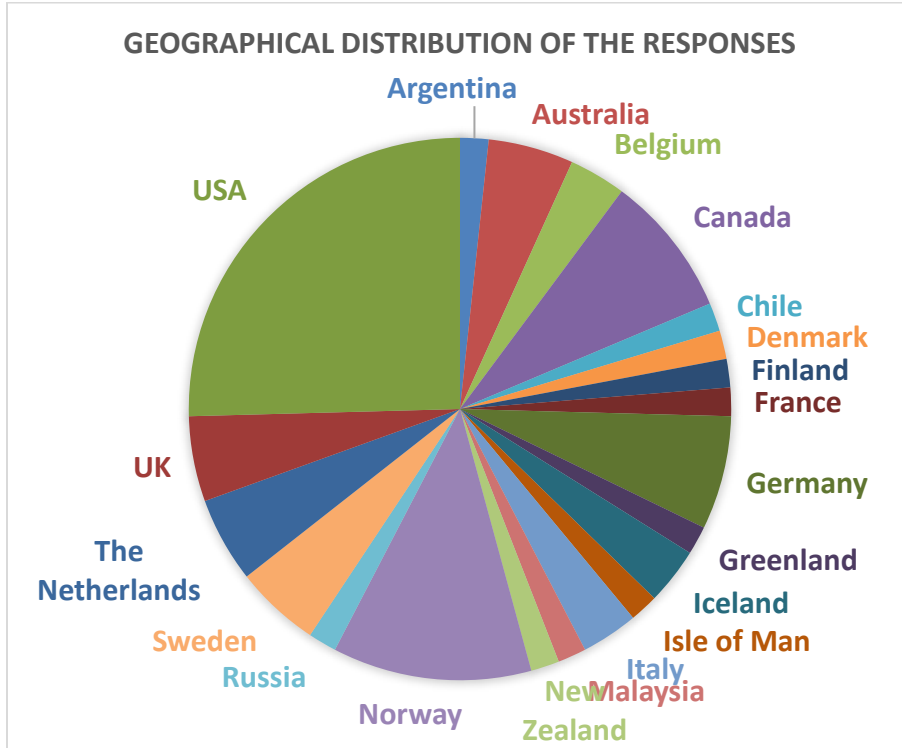


Fig. 2. Geographical distribution of the responses

## GENERAL INFORMATION

### Question 1 and 2: Name and sector of the company

The first question was an administrative question regarding the sector (multiple choice) and the name (free text) of the company.

13 different sectors answered the survey, providing a large and representative sample of ocean businesses and industries.

Thanks to a momentum in cruise/tourism business associations, the largest respondent sector corresponds to rather small companies involved in the cruise industry in the Polar Regions.

Container businesses and companies defining themselves as commercial have been the third largest groups to answer this survey. The fishing and the offshore oil & gas industries also participated in the survey and gave extensive details about their vessels and their routes.

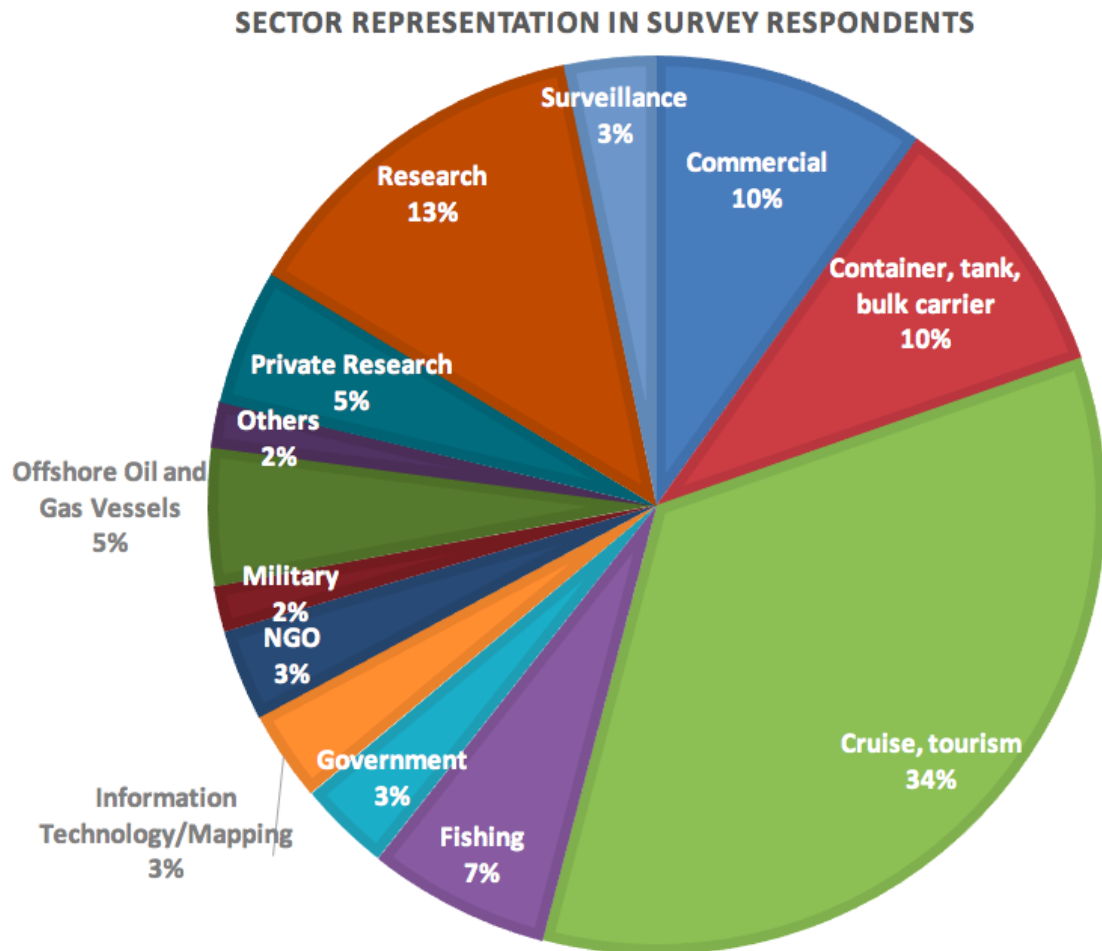


Fig. 3. Sector Representation in Survey Respondents

A complete list of companies with their name, their sector and their size is available in Annex A.

## Types of Ship

The three questions regarding the nature of the ships and vessels are displayed below:

**Question 3:** How many vessels do you operate that sail in Polar Regions (including vessels that sometimes sail in Polar Regions)?

Most of the respondents to this question indicated they had few vessels: indeed, 58% of the respondents answered this question by saying they have 1 or 2 vessels sailing in Polar Regions. 17% of respondents indicated they operated between 3 and 5 vessels in the Polar Regions and 17% indicated operating 6 to 10 vessels.

Only 8% indicated that they operate more than 10 vessels sailing in the Polar Regions.

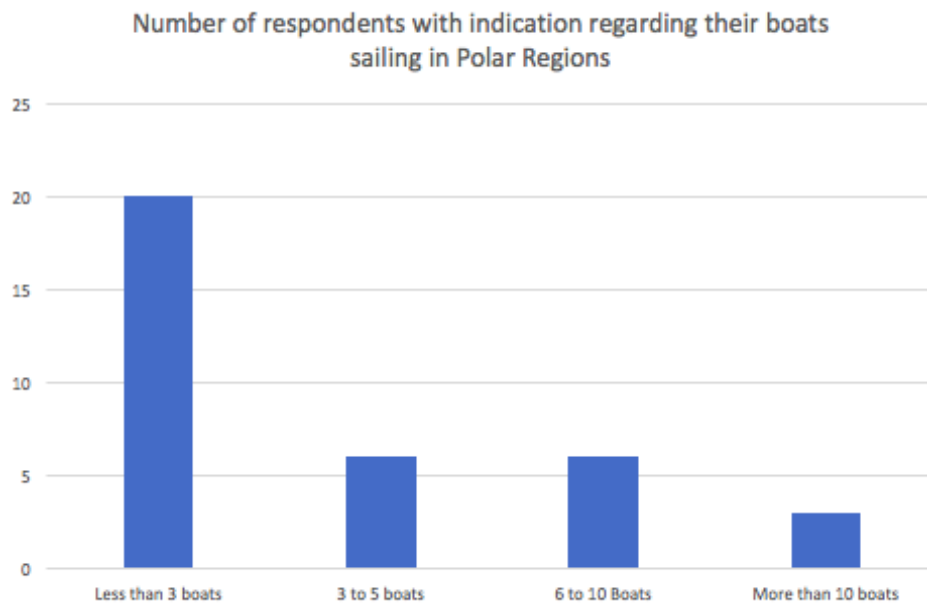


Fig. 4. Number of respondents grouped by number of vessels sailing in the Polar Regions.

## Question 4: Vessels' characteristics

Question 4 was relatively complex. The vessels' characteristics were suggested by the survey and could be ticked by the respondents. We would classify the suggestions in different groups. The first group regards the usage of the vessels: are they supply vessels or standby vessels? The answers are displayed in Graph 5 below.

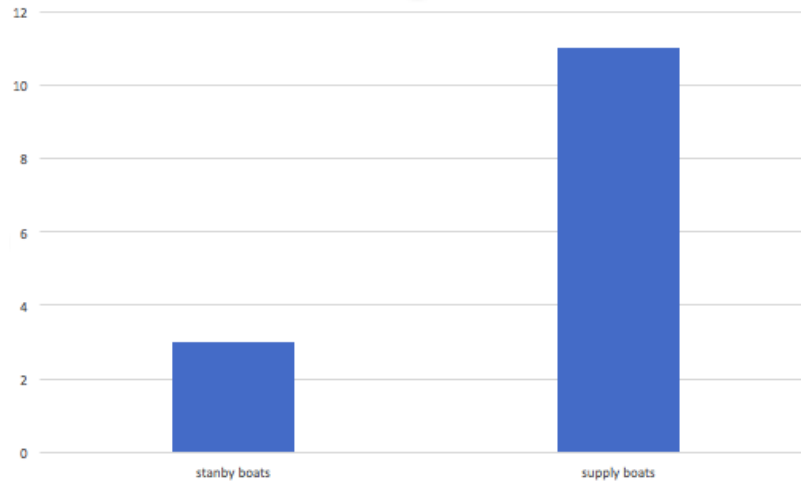


Fig. 5: Number of responses for standby vessels and supply vessels in vessels characteristics.

The second type of suggestion was based on the function of the vessels: for which business activity/activities are the vessels used?

We can count 31 Passengers’ vessels, 6 Oil & gas vessels, 14 Shipping vessels and 9 Fishing vessels. Finally, the last characteristics focused on qualities that a vessel sailing in the Polar Regions can have. The outcomes are visualized in Graphs 6 and 7 below.

Types of vessels by Boats' Function

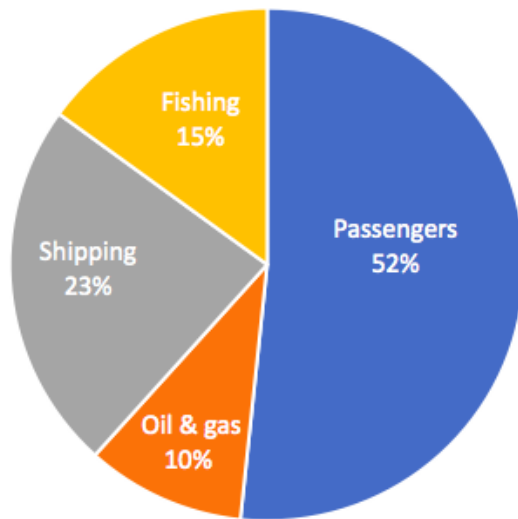


Fig. 6. Repartition of the vessels from survey respondents by function

Types of vessels by characteristics of the boat

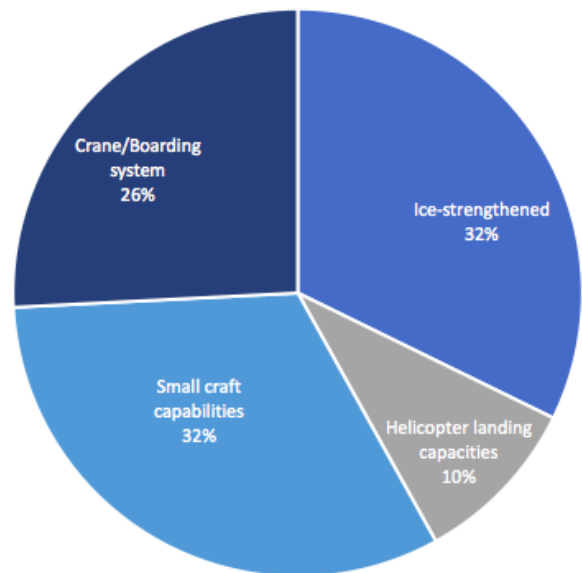


Fig. 7. Repartition of the vessels from survey respondents by characteristics

A highly valuable results of this question lies in the characteristic of the vessels owned by the organizations interested in collaboration with the scientific community. Indeed, 14 organizations that are open to collecting data and to cooperating with the scientific community are operating ice-strengthened ships in the Polar Regions. Table 3 below provides an overview of their ships and their level of interest in collaboration. More detail regarding all their routes can be found in Table 12.

Table 3. Respondents with positive answers to the question of collaboration positively AND indicating they have ice strengthened ships

Company sector	Company name	Collaboration	Number of Ships	Number of Ice Strengthened Ships
<b>COMMERCIAL</b>	Martech Polar Consulting Ltd	Maybe	23	12
<b>Cruise</b>	Hanse Explorer GmbH	Maybe	1	1
	Abercrombie & Kent, USA	Yes	2	2
	ANTARCTICA XXI	Maybe	2	1
	Cruise Management International	Yes	6	6
	Oceanwide Expeditions	Yes	4	3
	Quark Expeditions	Yes	6	6
	Seabourn Cruise Line Ltd	Yes	2	1
	Waterproof Expeditons	Maybe	2	2
<b>GOVERNMENT</b>	Swedish Polar Research Secretariat	Yes	1	1
<b>Oil &amp; Gas</b>	TechnipFMC	Maybe	3	3
<b>Research</b>	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research	Maybe	1	1
	National Institute of Water and Atmospheric Research	Yes	1	1
	OGS	Yes	1	1

#### Question 5: Average passenger capacity for each ship type.

The answers to the question regarding the average passengers' capacity have been very diverse. Some respondents indicated passengers' capacity by types of vessels, others answered more generally. Some gave precise numbers and others gave scales.

Our analysis indicates the following: 8 types of vessels can carry over 200 passengers. The **overall average of number of passengers on board is 110**, with a high number of rather small boats. All the precise information can be found in Table 11 in Annex A.

## ROUTES

### Question 6: Areas of the Polar Regions visited

It is of interest for scientific institutions and potential partnerships to know which Polar Regions respondents are often sailing in, and which company is going where and when.

The questions and thus, the maps, graphs and tables below are based on the following division (Legend 1):

In the Arctic, the space has been divided into three zones: the Arctic itself, to have a broader estimation of the frequency of business shipping in this region, and two sub-regions:

- The Barents-Kara-Laptev-East Siberian Seas
- The Chukchi-Beaufort-Lincoln-Wandel Seas

In the Antarctic, the choice has been made to split the sailing area of the Southern Ocean in the three following zones:

- Weddell Sea related to the Atlantic Ocean
- Prydz Bay related to the Indian Ocean
- Ross Sea related to the Pacific Ocean

### Results:

Among the 32 companies sailing in the Polar Regions, 29 report to be sailing in the Arctic and 23 in the Antarctic.

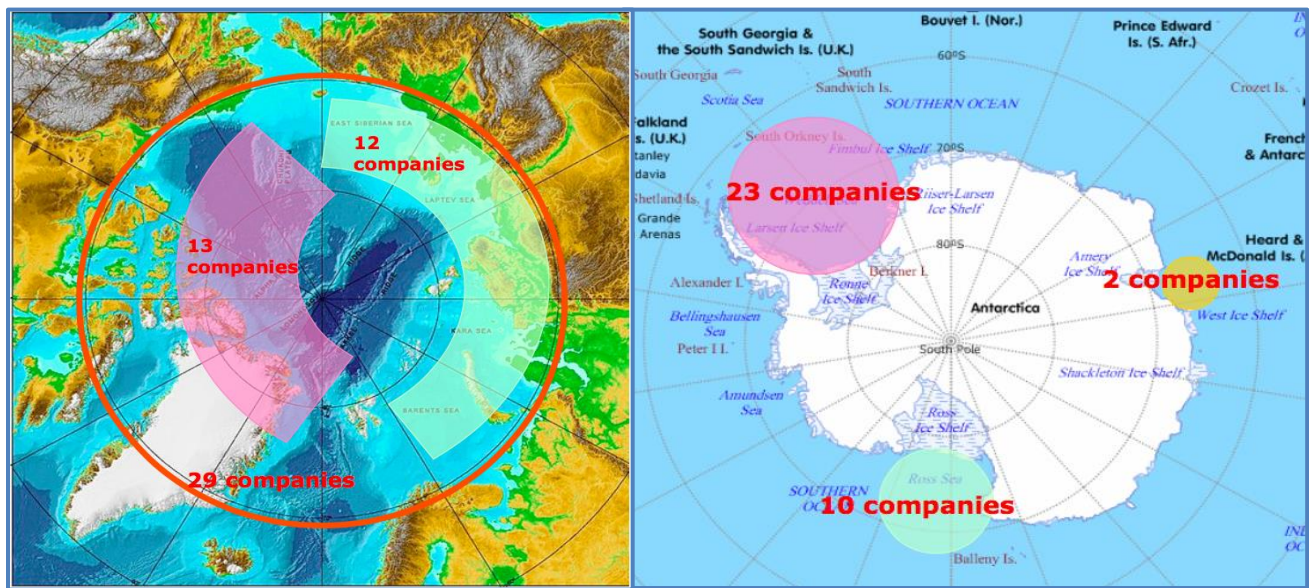


Fig. 8: Maps of the Polar Regions with their respective sailing frequencies

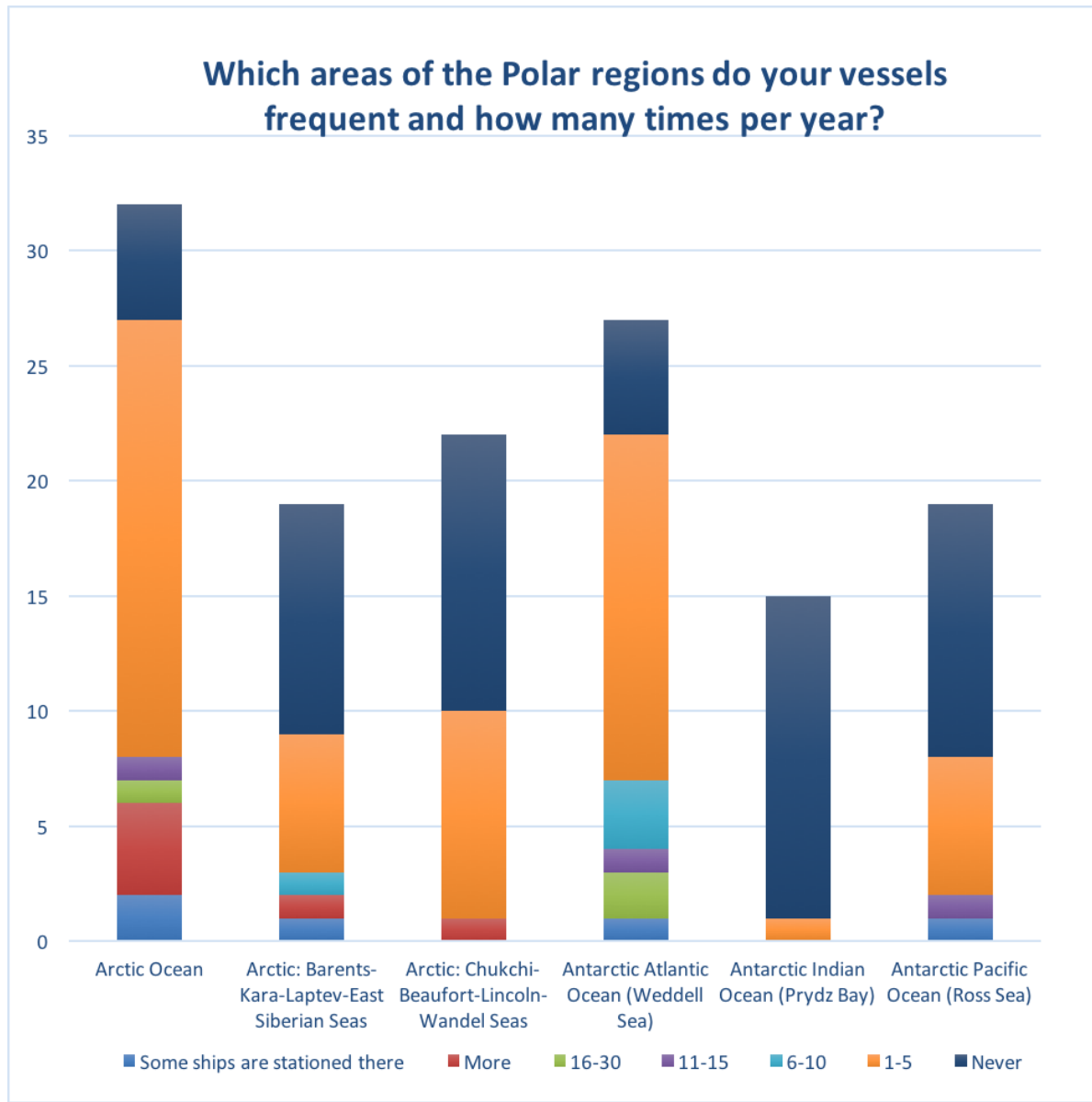


Fig. 9. Respondents sailing frequencies by zone of the Polar Regions (for legend, please refer to Legend 1).

Both sub-regions in the Arctic are visited by similar numbers of companies, whereas in the Antarctic companies are mostly going to the Weddell Sea (60%) and to the Ross Sea (26%) (with only 2 companies going to Prydz Bay).

**Question 7: Frequency of visits to the Polar Regions**

Companies reported they are mostly going to the Arctic during Northern Hemisphere Spring and Summer (between March and September) and going to the Antarctic in Northern Hemisphere Autumn and Winter (between October and February), see Graph 9 and Tables 4-6 for a detailed breakdown of results.

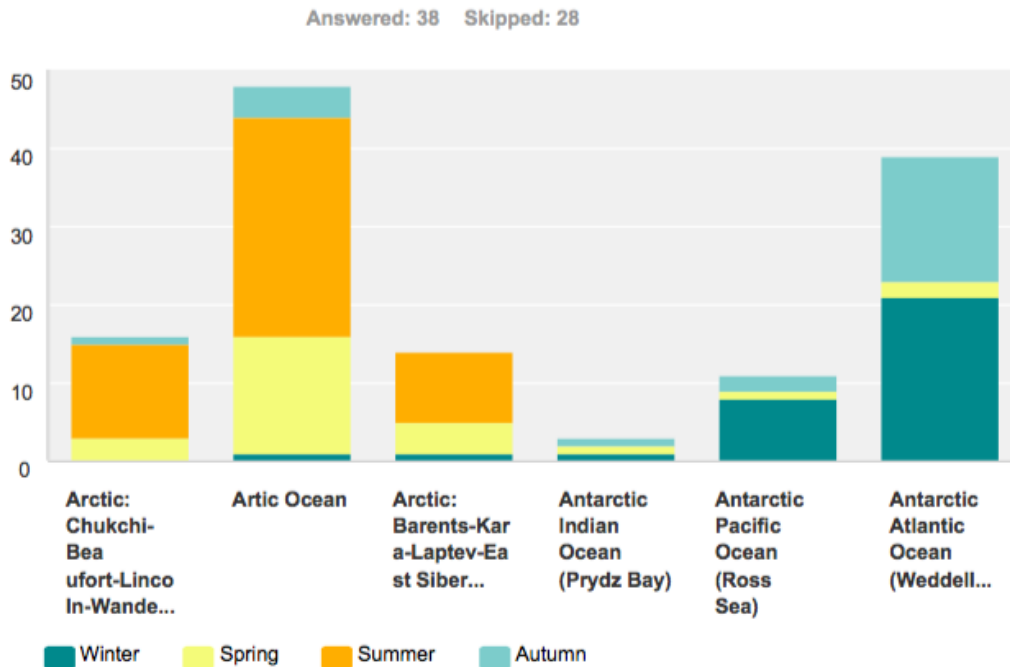


Fig. 10. Seasonal sailing frequencies of survey respondents by zone of the Polar Regions (for legend, please refer to Legend 1).

Table 4: Seasonal sailing percentage

<b>Arctic</b>	Total: 29 (J-M: 1; A-J: 15; J-S: 28; O-D: 4)	76,32%
Barents-Kara-Laptev-East Siberian Seas	Total: 12 (J-M: 1; A-J: 4; J-S: 9; O-D: 0)	31,58%
Chukchi-Beaufort-Lincoln-Wandel Seas	Total: 13 (J-M: 0; A-J: 3; J-S: 12; O-D: 1)	34,21%
<b>Antarctic</b>		
Atlantic Ocean (Weddell Sea)	Total: 23 (J-M: 21; A-J: 2; J-S: 0; O-D: 16)	60,53%
Indian Ocean (Prydz Bay)	Total: 2 (J-M: 1; A-J: 1; J-S: 0; O-D: 1)	5,26%
Pacific Ocean (Ross Sea)	Total: 10 (J-M: 8; A-J: 1; J-S: 0; O-D: 2)	26,32%

Legend: J-M: January, February, March, A-J: April, May, June, J-S: July, August, September, O-D: October, November, December

18 companies are sailing both in Arctic and in Antarctic. This is useful in terms of collaboration: these companies can collect data in both Polar regions and contribute to research in an extensive way.



Table 5: Survey respondents sailing near both Poles

Sector	Name of the company	Arctic			Antarctic		
		Operating there?	Number of times	Season	Operating there?	Number of times	Season
Commercial	NAVTOR AS	Yes	More	A-J; J-S	Yes	5-11	J-M
	Xylem Analytics	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	"Hanse Explorer" GmbH & Co. KG	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M
Cruise	Abercrombie & Kent, USA	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	Aurora Expeditions	Yes	1-5	A-J; J-S	Yes	11-15	O-D; J-M
	EYOS Expeditions	Yes	1-10	A-J; J-S	Yes	6-10	O-D; J-M
	Ocean Expeditions Ltd	Yes	1-10	J-S	Yes	1-5	J-M; A-J
	Oceanwide Expeditions	Yes	More	A-J; J-S	Yes	1-10	O-D; J-M
	Plantours Kreuzfahrten	Yes	1-5	J-S	Yes	1-5	J-M
	Poseidon Expeditions	Yes	1-5	A-J; J-S	Yes	6-10	O-D; J-M
	Quark Expeditions	Yes	1-15	A-J; J-S	Yes	6-10	O-D; J-M
	Seabourn Cruise Line Ltd	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	Waterproof Expeditons	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M
	Government	Swedish Polar Research Secretariat	Yes	1-15	J-S	Yes	1-10
Oil and Gas	Statoil	Yes	1-5	J-S	Yes	1-5	A-J
Private Research	OlympicAquafarms/BP/S Industries Inc.	Yes	1-5	J-S	Yes	1-5	O-D; J-M
Research	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research	Yes	1-5	J-S	Yes	1-5	J-M
	OGS	Some ships are stationed there		J-S	Some ships are stationed there		J-M

Legend: J-M: January, February, March, A-J: April, May, June, J-S: July, August, September, O-D: October, November, December

Among the 37 respondents to the routes questions, 32 companies are frequently sailing in Polar Regions, with 24 of them willing to collaborate with research.

Table 6. Companies willing to collaborate who gave of their routes details

Sector	Name of the company	Arctic			Antarctic			
		Operating there?	Number of times	Season	Operating there?	Number of times	Season	
Commercial	Martech Polar Consulting	Yes	1-5	O-D; J-M; J-S	No			
Container	Crowley Maritime	Yes	More	J-S	No			
	Oldendorff Carriers	Yes	1-5					
Cruise	Hanse Explorer	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M	
	Abercrombie & Kent	Yes	1-5	J-S	Yes	1-5	O-D; J-M	
	Aurora Expeditions	Yes	1-5	A-J; J-S	Yes	11-15	O-D; J-M	
	EYOS Expeditions	Yes	1-10	A-J; J-S	Yes	6-10	O-D; J-M	
	Ocean Expeditions Ltd	Yes	1-10	J-S	Yes	1-5	J-M; A-J	
	Oceanwide Expeditions	Yes	More	A-J; J-S	Yes	1-10	O-D; J-M	
	Plantours Kreuzfahrten	Yes	1-5	J-S	Yes	1-5	J-M	
	Poseidon Expeditions	Yes	1-5	A-J; J-S	Yes	6-10	O-D; J-M	
	Quark Expeditions	Yes	1-15	A-J; J-S	Yes	6-10	O-D; J-M	
	Quixote Expeditions	No	Never	Never	Yes	1-5	J-M	
	Rederij Bark EUROPA BV	No	Never	Never	Yes	1-5	O-D; J-M	
	Seabourn Cruise Line	Yes	1-5	J-S	Yes	1-5	O-D; J-M	
	Waterproof Expeditons	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M	
	Fishing	NOAHA	Yes	5-11	A-J; J-S; O-D	No		
		Royal Greenland	Yes	More	J-M; A-J; J-S; O-D	No		
Government	Swedish Polar Research Secretariat	Yes	1-15	J-S	Yes	1-10	J-M	
Oil and Gas	Technip	Yes	1-10	A-J; J-S				
Private Research	Fairweather Science LLC	Yes	1-10	J-S				
	Alfred Wegener Institute	Yes	1-5	J-S	Yes	1-5	J-M	
Research	Arctic Oil Spill Response Technology	Yes		A-J	No			
	OGS	Ships stationed		J-S	Ships stationed		J-M	
	<a href="#">Sven Lovén Centre</a>	Yes		J-S	No			

Legend: J-M: January, February, March, A-J: April, May, June, J-S: July, August, September, O-D: October, November, December

## Collaboration

### Question 8: What is the most interesting in-kind collaboration?

This question was multiple choice. The possible answers were “Yes”, “Maybe” and “No” to the following elements:

*If all liability and insurance issues can be dealt with by the science partner, would your fleet be interested, and able to:*

- Carry scientific passengers to and from research stations
- Deploy ocean observational equipment (e.g. Argos float / buoys)
- Have remote sensing equipment fitted to the ship (e.g. remote sensing instruments)

The first observation is that most of the companies that answered this question indicated they would be willing to deal with a science partner (as displayed in the graph below, “Yes” and “Maybe” represent over 80% of answers to the three choices).

The second observation is that companies favour deploying “ocean observational equipment (e.g. Argos float / buoys)” compared to carrying science passengers, and that they are largely open to having remote sensing equipment fitted to their ship.

The graph below sums up the answers to this question.

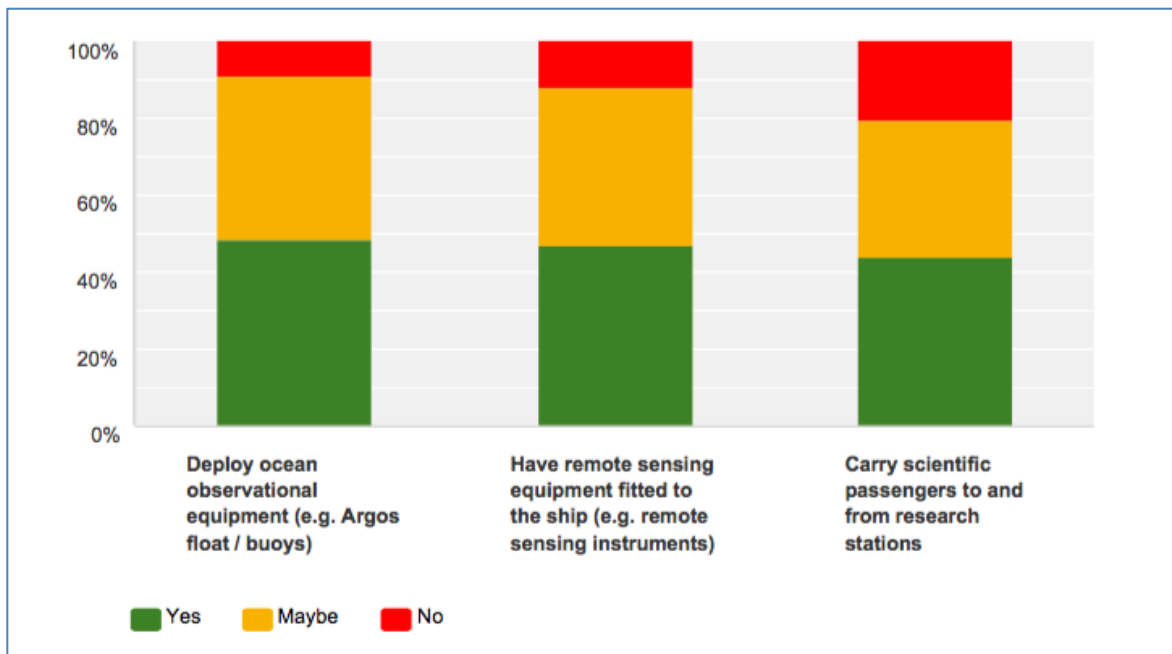


Fig. 11. Survey responses regarding interest in collaboration with EU-PolarNet

The following table 7 sums up the companies willing to collaborate with information regarding their vessels.

Table 7. Index of vessels characteristics of respondents open to collaboration

Company sector	Company name	Collaboration	Recovery	Number of ships in this company	Types of Number of Ships	Models name	Ice-strengthened	Helicopter landing capabilities	Small craft capabilities	Cranes/Boarding system	Average passenger capacity	Comments
COMMERCIAL	Martech Polar Consulting Ltd	Maybe	full passenger/cargo rates AND any third party costs	23	1 12 Commercial Bulk 2 3 Research 3 3 Passengers 4 5 Others		1	1	1	1	50 1000	
Container	Norden	Maybe	To be discussed	41	1 3 HandySize /Shipping-Dry Bulk Vessel 2 7 HandySize T /Shipping-Dry Bulk Vessel 3 4 Supramax/Shipping-Dry Bulk Vessel 4 25 Panamax/Shipping-Dry Bulk Vessel 5 2 Post Panamax/Shipping-Dry Bulk Vessel						15-20 15-20 15-20 15-20	
Container, tank, bulk carrier	Wallenius Marine AB	Yes	any third party costs	1	1 1 Supply / Oil&Gas/Shipping/container						0	small lighterage vessels, de
Container, tanker, bulk carrier	Crowley Maritime Corporation	Maybe	any third party costs	2	1 1 Supply / Oil&Gas						20	large barges delivering Oil
Cruise / Tourism	"Hanse Explorer" GmbH & Co. KG	Maybe	full passenger/cargo rate	1	1 1		1	1	1	1	12	
Cruise / Tourism	Abercrombie & Kent, USA	Yes	any third party costs AND in kind	2	1 2 Ice-class 1C / Passengers		1	1	1	1	Under 200	
Cruise / Tourism	ANTARCTICA XXI	Maybe	Maybe	2	1 1 Passengers		1				80	
Cruise / Tourism	Aurora Expeditions	Yes	reduced passenger/cargo rates	1	1 1 Passengers						52	
Cruise / Tourism	Cruise Management International	Yes	To be discussed	6	1 1 Passengers 2 1 Passengers 3 1 Passengers 4 1 Passengers 5 1 Passengers 6 1 Passengers		1	1	1	1	200 130 120 90 200 60	
Cruise / Tourism	EYOS Expeditions	Maybe	any third party costs	6	1 6 Private Yachts/ Passengers		1				12	
Cruise / Tourism	Latitude oceane	Yes	reduced passenger/cargo rates	1	1 1 Sailing Vessel (24m) / Passengers						10	
Cruise / Tourism	Noble Caladonia	Maybe	To be discussed	3	1 3 Passengers						100	
Cruise / Tourism	Ocean Expeditions Ltd	Yes	reduced passenger/cargo rates AND any third party costs	2	1 2 Passengers						9-12	
Cruise / Tourism	Oceanwide Expeditions	Yes	reduced passenger/cargo rates AND any third party costs AND in kind	4	1 2 sailing-ships / supply-standby /passenger ice strengthened motor vessels / Passengers 2 1 ice strengthened motor vessels / supply-standby /passenger 3 1 Passengers		1	1	1	1	25 117	1 125
Cruise / Tourism	Plantours Kreuzfahrten	Yes	any third party costs	6	1 6 Passengers						400	
Cruise / Tourism	Poseidon Expeditions	Maybe	reduced passenger/cargo rates AND in kind	1	1 1 Passengers						112	
Cruise / Tourism	Quark Expeditions	Yes	To be discussed	6	1 6 Passengers		1				80-200	
Cruise / Tourism	Quixote Expeditions	Yes	any third party costs AND in kind	1	1 1 Sailing Yacht / Passengers						8	
Cruise / Tourism	Reederij Bank EUROPA BV	Yes	any third party costs AND in kind	1	1 1 Passengers						42	
Cruise / Tourism	Seabourn Cruise Line Ltd	Yes	In Kind Contribution	2	1 1 Category II Passengers/ shipping						450	
Cruise / Tourism	Waterproof Expeditions	Maybe	reduced passenger/cargo rates	1	1 1 Passengers		1				12	
Cruise / Tourism	Xplore Expeditions	Yes	any third party costs AND in kind	1	1 1 Expedition sailing yacht / Passengers		1				56	
Fishing	Nunavut Offshore Allocation Holders Association (NOAHA)	Yes	any third party costs	3	1 1 Factory freezer trawler - 60 m / Fishing 2 1 Fixed gear vessel - 99 ft / Fishing 3 1 Fixed gear vessel - 99 ft / Fishing						27 15 15	
Fishing	Royal GreenLand	Maybe	any third party costs	20	1 9 off-shore / Fishing 2 11 in-shore / Fishing						0-3	
GOVERNMENT	Swedish Polar Research Secretariat	Yes	To be discussed	1	1 1 Polar Research Ice Breaker		1				50	
Offshore Oil and Gas	TechnipPMC	Maybe	any third party costs	3	1 Total 3 DSV / Oil&Gas 2 Reel Lay vessel / Oil&Gas 3 Research Vessels under USCG designation.		1	1	1	1	100-140 140	
Private research	Fairweather Science LLC	Yes	reduced passenger/cargo rates	2	1 1 Research Vessels under USCG designation.							
Research	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research	Maybe	To be discussed	1	1 1 Research		1				50	
Research	Arctic Research Foundation	Yes	reduced passenger/cargo rates	1	1 1 R/V Martin Bergmann		1				22	Equipped with A-frame.
Research	National Institute of Water and Atmospheric Research	Yes	full passenger/cargo rates AND any third party costs	1	1 1 Baltic Ice Class 1C		1				40	
Research	Sven Lovén Centre for marine infrastructure at the University of Gothenburg	Yes	full passenger/cargo rate	1	1 1 Regional Class Research Vessel ("Skagerak")						22	

### Question 9 Contact

Question 9 asked for the contact details of the person, in the respondent organization, who could be the contact point if collaboration was to be set up.

Name, Organization, email and telephone were filled in by 28 companies and organizations, willing to collaborate. The complete list of the contacts can be found in the Excel document gathering all the tables. This list is under limited access for privacy reasons.

As developed in the Conclusion of this document (see p. 21), the World Ocean Council will be in charge of the first contact with each of the companies, as a key link between the business community and the EU-PolarNet Programme.

### Question 10 Expected Cost Recovery

This question asked: *If you are able to provide any of these services (e.g. hosting or deploying instruments, hosting scientists), what would be your expected recovery of the associated costs?*

Most of the respondents indicated that they were willing to provide these services in exchange for payment of any third-party costs. Two respondents (Norden and Latitude oceane) answered “None” to this question. The results of this question are shown in the graph below.

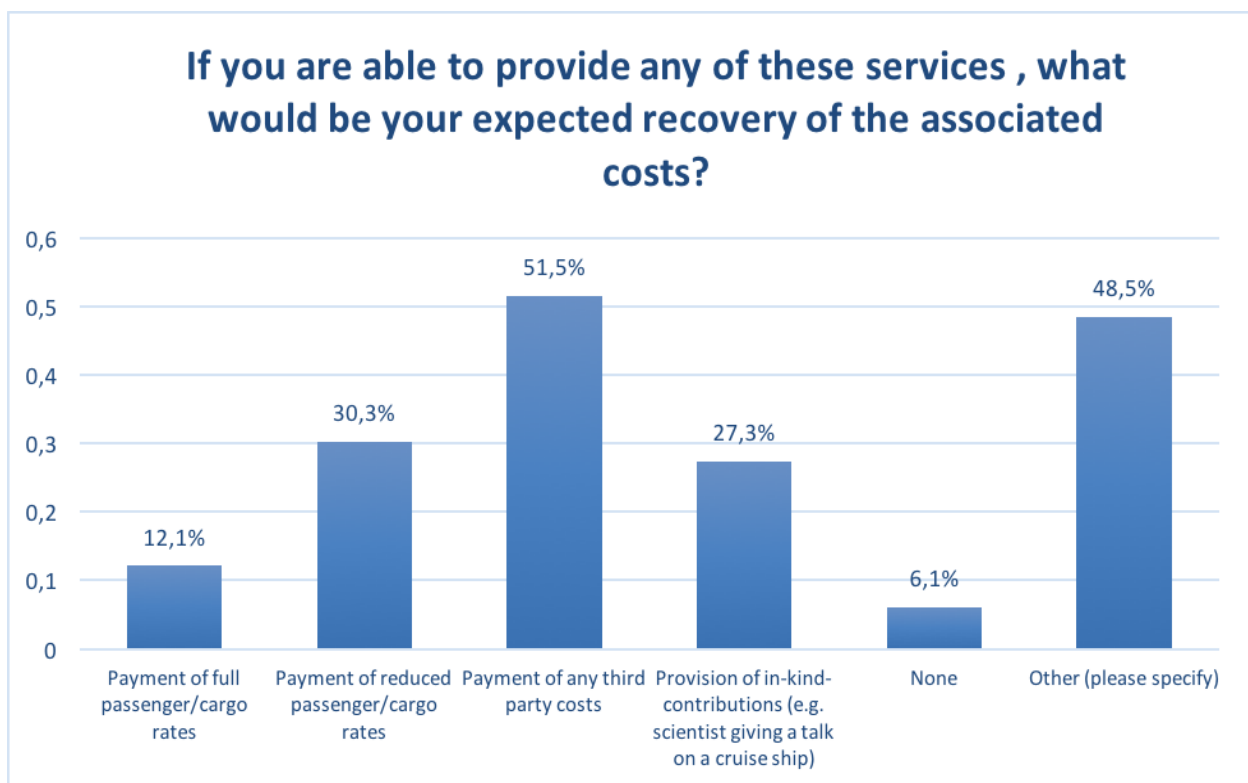


Fig. 12. Best recovery for business – scientific collaboration according to survey respondents

Table 8 below gathers all the answers to both collaboration questions and helps understanding the high motivation of companies in regards to collaboration with science partners.

Table 8. Collaboration and Compensation answers to the survey

Collaboration	Total answers: 34	YES
Carry scientific passengers to and from research stations	Total: 34 (Yes: 15, Maybe: 12, No: 7)	44,12%
Deploy ocean observational equipment (e.g. Argos float / buoys)	Total: 33 (Yes: 16, Maybe: 14, No: 3)	47,06%
Have remote sensing equipment fitted to the ship (e.g. remote sensing instruments)	Total: 34 (Yes: 16, Maybe: 14, No: 4)	47,06%
Compensation / Recovery	Total Answers: 30	YES
Payment of full passenger/cargo rates	4	13,33%
Payment of reduced passenger/cargo rates	9	30,00%
Payment of any third-party costs	15	50,00%
Provision of in-kind-contributions (e.g. scientist giving a talk on a cruise ship)	8	26,67%
None	2	6,67%

## CONCLUSION

Following EU-PolarNet’s objective of **initiating, conducting and sustaining an on-going dialogue and cooperation with** business and industry sectors **from the Polar Regions**, the survey shows the interest from the business community for collaboration.

**This survey (Deliverable D3.4) was the first step in “identifying polar commercial infrastructures that could be made available to implement the Polar Research Programme”.**

It has largely gathered information on collaboration between the business community and the scientific community regarding data collection in Polar Regions. It has established the first contact in a larger interaction between industry and research for an efficient use of existing infrastructure in research projects. Indeed, this survey represents an opportunity to switch research budgets normally allocated to bespoke infrastructure to data collection based on collaboration, leading to higher resource efficiency and a reduced pressure on bespoke infrastructure.

This was a crucial step to develop fruitful collaborations and positive word-of-mouth in the Polar business community. Successful cooperation and dialogue can enable the scientific community to further reach out to the industry.

The next step consists in developing recommendations for the timing and the process by which to establish contact between researchers and the companies open to collaboration.

The WOC works on a “Smart Ocean-Smart Industries (SO-SI) Platform” to ensure industry data collection and sharing is coordinated, efficient and cost effective. It is through the use of such a platform that the outreach following the survey should begin.

A pilot, specific to the survey project region (Polar areas), will be developed through the SO-SI platform. A brokerage system, based on contact by contact brokerage fees, could financially support the Platform to ensure sustainability of this follow-up.

The recommended next steps are:

- Define the outreach process in more detail. Circulate the process to European scientific institutions.
- ➔ Should contacts be initiated case by case or should the SO-SI platform be used to set up a global and joint collaboration between all the survey respondents and the research institutes?
  - This step is to be discussed by the parties by the end of 2017.
- Clarify sources of financial contribution to SO-SI platform and its modalities.
- ➔ Modes could include: Calls for proposals, Expressions of interest linked to a payment for services, Pilot project funding
  - The aim would be to have an operational service to offer by mid/end 2018.

Follow-up will be organized between EU-PolarNet, scientific institutions and the WOC regarding these different elements.

## ANNEX A: COMPLEMENTARY DATA

Table 10. Size of survey responding organizations

Legend: Small: 1-50 employees, Medium: 51-200 employees, Large: 201-1000 employees, Big: >1000 employees, Cluster/network/Universities/N.A: no precise number of employees

Sector	Company	Size
Commercial	<b>Martech Polar Consulting Ltd</b>	Small
Commercial	<b>Subsea Industries</b>	Small
Commercial	<b>NAVTOR AS</b>	Small
Commercial	<b>Teledyne RD Instruments</b>	Medium
Commercial	<b>Xylem Analytics</b>	Small
Container	<b>Oldendorff Carriers</b>	Big
Container	<b>Norden</b>	Large
Container	<b>GCE NODE - Norway</b>	Cluster
Container	<b>Crowley Maritime Corporation</b>	Big
Container	<b>Wallenius Marine AB</b>	Large
Container	<b>Aker Arctic Technology Inc</b>	Small
Cruise, tourism	<b>Ocean Expeditions Ltd</b>	Small
Cruise, tourism	<b>Quixote Expeditions</b>	Small
Cruise, tourism	<b>Zegrahm Expeditions</b>	Small
Cruise, tourism	<b>Hurtigruten AS</b>	Big
Cruise, tourism	<b>EYOS Expeditions</b>	Small
Cruise, tourism	<b>Latitude oceane</b>	Small
Cruise, tourism	<b>Rederij Bark EUROPA BV</b>	Medium
Cruise, tourism	<b>ANTARCTICA XXI</b>	Small
Cruise, tourism	<b>Aurora Expeditions</b>	Small
Cruise, tourism	<b>Oceanwide Expeditions</b>	Small
Cruise, tourism	<b>Plantours Kreuzfahrten</b>	Large
Cruise, tourism	<b>Quark Expeditions</b>	Medium
Cruise, tourism	<b>Seabourn Cruise Line Ltd</b>	Big
Cruise, tourism	<b>Tauck</b>	Large
Cruise, tourism	<b>Waterproof Expeditons</b>	Small
Cruise, tourism	<b>Poseidon Expeditions</b>	Medium
Cruise, tourism	<b>"Hanse Explorer" GmbH &amp; Co. KG</b>	N.A
Cruise, tourism	<b>Abercrombie &amp; Kent, USA</b>	Big
Cruise, tourism	<b>Cruise Management International</b>	Small
Cruise, tourism	<b>Noble Caledonia</b>	Medium



Sector	Company	Size
Fishing	Royal Greenland	Big
Fishing	Iceland Ocean Cluster	Cluster
Fishing	FanLi Marine and Consultacy Pte. Ltd.	Small
Fishing	Nunavut Offshore Allocation Holders Association	Cluster
Government	Swedish Polar Research Secretariat	Small
Government	US Committee on the Marine Transportation System	Medium
Information Technology/Mapping	Esri	Big
Information Technology/Mapping	Nansen Environmental and Remote Sensing Center	Medium
Military	United Force	N.A
NGO	Arctic Portal	Network
NGO	Greater Caribbean energy and environmental foundation	N.A
Offshore Oil and Gas	GeCon	Big
Offshore Oil and Gas	Statoil	Big
Offshore Oil and Gas	Technip	Big
Others	Bray Yacht Design And Research Ltd.	N.A
Private Research	Fairweather Science LLC	Small
Private Research	OlympicAquafarms/BP/S Industries Inc.	Small
Private Research	Xplore Expeditions	Small
Research	Arctic Oil Spill Response Technology	Network
Research	Centro Euro-Mediterraneo sui Cambiamenti Climatici	Network
Research	Alfred Wegener Institute Helmholtz Centre	Large
Research	Arctic Research Foundation	Small
Research	OGS	Large
Research	National Institute of Water and Atmospheric Research	Large
Research	Sven Lovén Centre for marine infrastructure	University
Research	University of Montana	University
Surveillance	Canadian Coast Guards	N.A
Surveillance	Kongsberg Satellite Services AS	Medium

## TYPES OF VESSEL

The following table, Table 11, depicts all the characteristics of the vessels of the respondents.

Table 11: Survey respondents' vessel characteristics

Company sector	Company name	Types of Ship According to the company	Number of ships in this type	Models name	Supply boats	Standby boats	Passenger Boat	Oil and Gas Vessel	Shipping	Tanker/dry bulk vessels	Fishing Boat	Ice-strengthened	Helicopter landing capacities	Small craft capabilities	Crane/Boarding system	Average passenger capacity for each ship type.	Comments
COMMERCIAL	Martech Polar Consulting Ltd	1	12	Commercial Bulk					1			1		1			
COMMERCIAL	Martech Polar Consulting Ltd	2	3	Research										1		50	
COMMERCIAL	Martech Polar Consulting Ltd	3	3	Passengers			1						1			1000	
COMMERCIAL	Martech Polar Consulting Ltd	4	5	Others													
COMMERCIAL	NAVTOR AS	1									1					10	
COMMERCIAL	NAVTOR AS	2			1		1									200	
COMMERCIAL	NAVTOR AS	3							1							10	
COMMERCIAL	WWL	1	0						1								
Container, tanker, bulk carrier	Crowley Maritime Corporation	1	1		1			1	1	1				1	1	20	small lightage vessels delivering fuel and goods
Container, tanker, bulk carrier	Crowley Maritime Corporation	2	1		1			1							1	20	large barges delivering Oil and gas production modules
Container, tanker, bulk carrier	Oldendorff Carriers	1	6						1							0	
Container, tank, bulk carrier	Norden	1	3	Handysize						1						15-20	
Container, tank, bulk carrier	Norden	2	7	Handysize T						1						15-20	
Container, tank, bulk carrier	Norden	3	4	Supramax						1						15-20	
Container, tank, bulk carrier	Norden	4	25	Panamax						1						15-20	
Container, tank, bulk carrier	Norden	5	2	Post Panamax						1						15-20	
Container, tank, bulk carrier	Wallenius Marine AB	1	0						1							0	
Cruise / Tourism	"Hanse Explorer" GmbH & Co.	1	1									1		1		12	
Cruise / Tourism	Abercrombie & Kent, USA	1	2	Ice-class 1C			1					1		1	1	Under 200	
Cruise / Tourism	ANTARCTICA XXI	1	1									1				80	
Cruise / Tourism	ANTARCTICA XXI	2	1													120	
Cruise / Tourism	Aurora Expeditions	1	1				1									52	
Cruise / Tourism	Cruise Management Internatio	1	1				1					1		1		200	
Cruise / Tourism	Cruise Management Internatio	2	1				1					1		1		130	
Cruise / Tourism	Cruise Management Internatio	3	1				1					1		1		120	
Cruise / Tourism	Cruise Management Internatio	4	1				1					1		1		90	
Cruise / Tourism	Cruise Management Internatio	5	1				1					1		1		200	
Cruise / Tourism	Cruise Management Internatio	6	1				1					1		1		60	
Cruise / Tourism	EYOS Expeditions	1	6	Private Yachts			1									12	
Cruise / Tourism	Hurtigruten AS	1	1				1									500	
Cruise / Tourism	Hurtigruten AS	2	1				1									250	
Cruise / Tourism	Hurtigruten AS	3	1				1									200	
Cruise / Tourism	Latitude oceane	1	1	Sailing Vessel (24m)			1							1		10	
Cruise / Tourism	Noble Caledonia	1	3													100	
Cruise / Tourism	Ocean Expeditions Ltd	1	2				1									9-12	
Cruise / Tourism	Oceanwide Expeditions	1	2	sailing ships ice strengthened motor vessels	1	1	1					1		1	1	25	
Cruise / Tourism	Oceanwide Expeditions	2	1	ice strengthened motor vessels			1					1		1	1	125	
Cruise / Tourism	Oceanwide Expeditions	3	1	ice strengthened motor vessels	1	1	1					1		1	1	117	
Cruise / Tourism	Plantours Kreuzfahrten	1	6				1									400	
Cruise / Tourism	Poseidon Expeditions	1	1				1								1	112	
Cruise / Tourism	Quark Expeditions	1	6				1					1		1	1	80-200	
Cruise / Tourism	Quixote Expeditions	1	1	Sailing Yacht			1									8	
Cruise / Tourism	Rederij Bank EUROPA BV	1	1				1							1		42	

Company sector	Company name	Types of Ship According to the company	Number of ships in this type	Models name	Supply boats	Standby boats	Passenger Boat	Oil and Gas Vessel	Shipping	Tanker/dry bulk vessels	Fishing Boat	Ice-strengthened	Helicopter landing capacities	Small craft capabilities	Crane/Boarding system	Average passenger capacity for each ship type.	Comments
Cruise / Tourism	Seabourn Cruise Line Ltd	1	1	Category II										1		450	
Cruise / Tourism	Seabourn Cruise Line Ltd	1					1		1			1					
Cruise / Tourism	Waterproof Expeditions	1					1					1		1	1	12	
Cruise / Tourism	Waterproof Expeditions	2					1					1		1	1	56	
Cruise / Tourism	Xplore Expeditions	1	1	Expedition sailing yacht			1							1		12	
Cruise / Tourism	Zegrahm Expeditions	1	2	Less Than 200 Passengers			1									120	
Fishing	Nunavut Offshore Allocation H	1	1	Factory freezer trawler - 60 m							1					27	
Fishing	Nunavut Offshore Allocation H	2	1	Fixed gear vessel - 99 ft							1					15	
Fishing	Nunavut Offshore Allocation H	3	1	Fixed gear vessel - 99 ft							1					15	
Fishing	Royal GreenLand	1	9	off-shore							1					0-3	
Fishing	Royal GreenLand	2	11	in-shore							1					0	
GOVERNMENT	Swedish Polar Research Secret	1	1	Polar Research Ice Breaker								1				50	
Military	United Force	1										1					
Military	United Force	2										1	1	1			
Military	United Force	3			1			1	1			1	1	1			
Military	United Force	4			1							1	1	1			
Military	United Force	5			1						1	1	1	1			
Military	United Force	6			1						1	1	1	1			
Offshore Oil and Gas Vessels	Statoll	1	5		1	1										15	
Offshore Oil and Gas Vessels	TechnipFMC	1	Total 3	DSV				1				1	1	1	1	100-140	
Offshore Oil and Gas Vessels	TechnipFMC	2	Total 3	Reel Lay vessel				1				1	1	1	1	140	
Private research	Fairweather Science LLC	1	1	Research Vessels under USCG designation.												28	
Private research	Fairweather Science LLC	2	1	Research Vessels under USCG designation.												31	
Private research	OlympicAquafarms/BP/S Indus	1		contract fishing vessels for hydrographic research, some are ice reinforced government and private icebreakers							1	1		1		2	
Private research	OlympicAquafarms/BP/S Indus	2										1	1	1	1	15	
Research	Alfred Wegener Institute Helm	1	1	Research								1	1	1	1	50	
Research	Arctic Research Foundation	1	1	R/V Martin Bergmann										1	1	22	Equipped with A-frame.
Research	Arctic Research Foundation	2	2	To Come in 2017										1	1	12	
Research	Arctic Research Foundation	3	3	To come after 2017										1	1	10	
Research	National Institute of Water and OGS	1	1	Baltic Ice Class IC							1	1	1	1	1	40	
Research	Sven Lovén Centre for marine Research Vessel ("Skagerak")	1	1	Regional Class Research Vessel				1				1		1		22	
Research	Sven Lovén Centre for marine Research Vessel ("Skagerak")	1	1									1				16	

**ROUTES**

Table 12: Organizations' routes in the Polar Regions.

Legend: J-M: January, February, March, A-J: April, May, June, J-S: July, August, September, O-D: October, November, December

Sector	Name of the company	Arctic (Yes/No)	Number of times	When?	Antarctic (Yes/No)	Number of times	When?
	Total	32	19	22		27	15
	Percentage vs total respondent	86,49%	51,35%	59,46%		72,97%	40,54%
Commercial	Sector total (yes)	3			1		0
	Martech Polar Consulting Ltd	Yes	1-5	O-D; J-M; J-S	No		
	NAVTOR AS	Yes	More	A-J; J-S	Yes	5-11	J-M
	Subsea Industries						
	Teledyne RD Instruments						
	WWL	No			No		
	Xylem Analytics	Yes	1-5	J-S	Yes	1-5	O-D; J-M
Container, tank, bulk carrier	Sector total (yes)	1			1		
	Aker Arctic Technology Inc						
	Crowley Maritime Corporation	Yes	More	J-S	No		
	GCE NODE - Norway						
	Norden						
	Oldendorff Carriers	Yes	1-5				
	Wallenius Marine AB	No			No		
Cruise, tourism	Sector total (yes)	14			15		
	"Hanse Explorer" GmbH & Co. KG	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M
	Abercrombie & Kent, USA	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	ANTARCTICA XXI				No		
	Aurora Expeditions	Yes	1-5	A-J; J-S	Yes	11-15	O-D; J-M
	Cruise Management International						
	EYOS Expeditions	Yes	1-10	A-J; J-S	Yes	6-10	O-D; J-M
	Hurtigruten AS	Yes	16-30	A-J; J-S	Yes	16-30	O-D; J-M
	Latitude oceane						
	Noble Caledonia	Yes	1-10	J-S	Yes	1-5	O-D; J-M
	Ocean Expeditions Ltd	Yes	1-10	J-S	Yes	1-5	J-M; A-J

Sector	Name of the company	Arctic (Yes/No)	Number of times	When?	Antarctic (Yes/No)	Number of times	When?
	Oceanwide Expeditions	Yes	More	A-J; J-S	Yes	1-10	O-D; J-M
	Plantours Kreuzfahrten	Yes	1-5	J-S	Yes	1-5	J-M
	Poseidon Expeditions	Yes	1-5	A-J; J-S	Yes	6-10	O-D; J-M
	Quark Expeditions	Yes	1-15	A-J; J-S	Yes	6-10	O-D; J-M
	Quixote Expeditions	No	Never	Never	Yes	1-5	J-M
	Rederij Bark EUROPA BV	No	Never	Never	Yes	1-5	O-D; J-M
	Seabourn Cruise Line Ltd	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	Tauk						
	Waterproof Expeditons	Yes	1-5	A-J; J-S	Yes	1-5	O-D; J-M
	1. Zegrahm Expeditions	Yes	1-5	J-S	No		
Fishing	Sector total	2					
	FanLi Marine and Consultacy Pte. Ltd.						
	Iceland Ocean Cluster						
	Nunavut Offshore Allocation Holders Association (NOAHA)	Yes	5-11	A-J; J-S; O-D	No		
	Royal Greenland	Yes	More	J-M; A-J; J-S; O-D	No		
Government	Sector total (yes)	1			1		
	Swedish Polar Research Secretariat	Yes	1-15	J-S	Yes	1-10	J-M
	US Committee on the Marine Transportation System						
Information Technology /Mapping	Sector total						
	Esri						
	Nansen Environmental and Remote Sensing Center						
NGO	Sector total (yes)	1					
	Arctic Portal						
	Greater Caribbean energy and environmental foundation	Yes		A-J; J-S			
	Sector total (yes)	2			1		
	GeCon						

Sector	Name of the company	Arctic (Yes/No)	Number of times	When?	Antarctic (Yes/No)	Number of times	When?
	Statoil	Yes	1-5	J-S	Yes	1-5	A-J
	Technip	Yes	1-10	A-J; J-S			
Others	Sector total						
	Bray Yacht Design And Research Ltd.						
Private Research	Sector total (yes)	2			2		
	Fairweather Science LLC	Yes	1-10	J-S			
	OlympicAquafarms/BP/S Industries Inc.	Yes	1-5	J-S	Yes	1-5	O-D; J-M
	Xplore Expeditions	No			Yes	1-5	O-D; J-M
Research	Sector total (yes)	3			1		
	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research	Yes	1-5	J-S	Yes	1-5	J-M
	Arctic Oil Spill Response Technology - Joint Industry Programme	Yes		A-J	No		
	Arctic Research Foundation	No					
	Centro Euro-Mediterraneo sui Cambiamenti Climatici						
	National Institute of Water and Atmospheric Research						
	OGS	Some ships are stationed there		J-S	Some ships are stationed there		J-M
	Sven Lovén Centre for marine infrastructure at the University of Gothenburg, Sweden	Yes		J-S	No		
	University of Montana						
Surveillance	Sector total (yes)						
	Canadian Coast Guards						
	Kongsberg Satellite Services AS						

## Unusual Routes

We considered the following as companies with special routes:

- Companies going to the Arctic in October, November, December and in January, February, March.
- Companies going to the Antarctic in April, May, June and July, August, September.
- Companies going to the Indian Ocean (Prydz Bay).
- Companies travelling more than 10 times per year in Arctic or Antarctic.
- Companies going to all the Arctic regions.

These special elements are displayed in orange in the following table.

Table 13: Unusual Routes or Operating season in the Polar Regions.

Legend: J-M: January, February, March, A-J: April, May, June, J-S: July, August, September, O-D: October, November, December

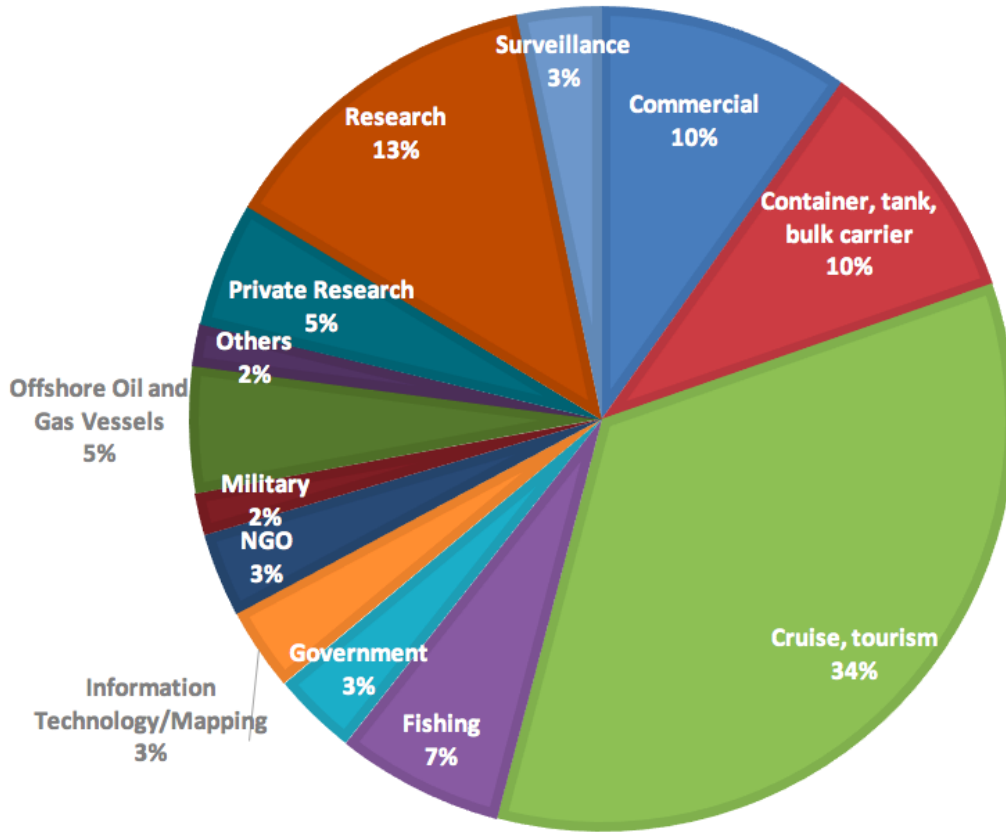
Sector	Company	Arctic					Antarctic				
		Number of times	When?	Arctic	Barents Laptev-East Siberian Seas	Chukchi-Beaufort-Lincoln-Wandel Seas	Number of times	When?	Wed dell Sea	Prydz Bay	Ross Sea
Commercial	Martech Polar Consulting	1-15	O-D; J-M; J-S	1-5	1-5	1-5					
	NAVTOR AS	More	A-J; J-S	More			5-11	J-M			5-11
	Xylem Analytics	1-15	J-S	1-5	1-5	1-5	1-5	O-D; J-M	1-5	Never	1-5
Container	Crowley Maritime	More	J-S			More					
Cruise	Aurora Expeditions	1-5	A-J; J-S	1-5			11-15	O-D; J-M	11-15		
	EYOS Expeditions	1-10	A-J; J-S	1-5	0	1-5	6-15	O-D; J-M	6-10		1-5
	Hurtigruten	16-30	A-J; J-S	16-30			16-30	O-D; J-M	16-30		
	Ocean Expeditions	1-15	J-S	1-5	1-5	1-5	1-5	J-M; A-J	1-5	Never	Never
	Oceanwide Expeditions	More	A-J; J-S	More			1-10	O-D; J-M	1-5		1-5
	Quark Expeditions	1-15	A-J; J-S	1-5	1-5	1-5	6-10	O-D; J-M	6-10		Never
	Seabourn Cruise Line	1-5	J-S	1-5			1-5	O-D; J-M		1-5	

Sector	Company	Arctic					Antarctic				
		Number of times	When?	Arctic	Barents Laptev-East Siberian Seas	Chukchi-Beaufort-Lincoln-Wandel Seas	Number of times	When?	Weddell Sea	Prydz Bay	Ross Sea
Fishing	NOAHA	5-11	A-J; J-S; O-D	5-11							
	Royal Greenland	More	J-M; A-J; J-S; O-D	6-10							
Government	Swedish Polar Research Secretariat	1-15	J-S	1-5	1-5	1-5	1-10	J-M	1-5		1-5
Oil and Gas	Statoil	1-5	J-S	1-5			1-5	A-J	1-5	1-5	
Research	OGS	Ships stationed there	J-S	Ships stationed there	Ships stationed there	Never	Ships stationed there	J-M	Ships stationed there	Never	Ships stationed there



ANNEX B: RESPONSE STATISTICS

SECTOR REPRESENTATION IN SURVEY RESPONDENTS



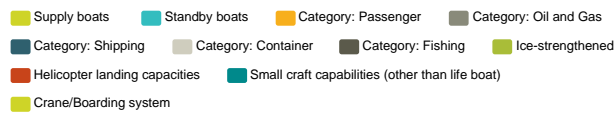
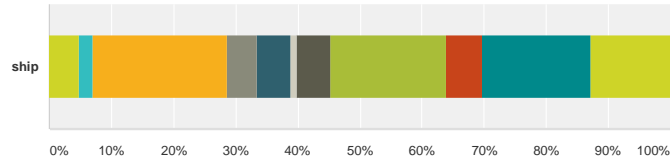
**Q3 How many vessels do you operate that sail in Polar regions (including vessels that sometimes sail in Polar regions)? Please state how many categories these vessels can be classified under, and how many vessels you operate per category.**

Answered: 59 Skipped: 7

#	Responses	Date
1	Segment and number of vessels Handysize 3 Handysize T 7 Supramax 4 Panamax 25 Post Panamax 2	2/16/2017 12:58 PM
2	20. 9 off-shore (Type 1). 11 in-shore (Type 2).	2/15/2017 7:15 PM
3	0	2/15/2017 1:16 PM
4	We are a cluster of 75 Companies. The cluster do not operate vessels. We work with competence building and R&D together with the participating companies. Artic is one of the areas where we have Projects.	2/13/2017 6:38 PM
5	none	2/13/2017 1:44 PM
6	0	2/13/2017 11:51 AM
7	None	2/13/2017 11:33 AM
8	5	2/13/2017 10:51 AM
9	None.	2/13/2017 7:37 AM
10	0	2/12/2017 7:13 PM
11	3	2/8/2017 9:42 AM
12	None. Our research project use government and private vessels.	2/7/2017 11:06 AM
13	2 Vessels - One in the Antarctic. One in the Arctic. Both vessels fall into the categories selected above.	2/1/2017 2:21 PM
14	2	1/31/2017 10:34 AM
15	We are a service provider, providing Ice Navigation support onboard customer ships Commercial Bulk - up to 12 ship Research - up to 3 ships Passenger - up to 3 ships Others - up to 5 ships	1/27/2017 9:44 PM
16	1 vessel - Sailing Yacht	1/22/2017 8:04 PM
17	None	1/20/2017 3:42 PM
18	0	1/20/2017 1:09 AM
19	3 vessels: R/V Martin Bergmann and 2 more upcoming in 2017 and beyond	1/19/2017 9:12 PM
20	1 Research Vessel	1/19/2017 5:02 PM
21	0	1/19/2017 4:10 PM
22	0	1/19/2017 10:28 AM
23	3 2 Category 2 ships 1 Category 1 ship	1/19/2017 7:53 AM
24	2 less than 200 passengers	1/19/2017 4:19 AM
25	2	1/18/2017 10:49 PM
26	We do not own any vessels ourselves but we operate on approximately 6 vessels a year in the polar regions. They are all private yachts.	1/18/2017 10:10 PM
27	1	1/18/2017 10:00 PM
28	1	1/18/2017 8:21 PM

**Q4 Vessels' characteristics (In the table, 'Type of Ship 1' refers to the largest number of similar ships in your fleet, 'Type of ship 2' to the second largest, etc. You can choose several categories for one type of ship and add more detail in the comment box).**

Answered: 42 Skipped: 24



	Supply boats	Standby boats	Category: Passenger	Category: Oil and Gas	Category: Shipping	Category: Container	Category: Fishing	Ice-strengthened	Helicopter landing capacities	Small craft capabilities (other than life boat)	Crane/Boarding system	Total Respondents
ship	4.79% 9	2.13% 4	21.81% 41	4.79% 9	5.32% 10	1.06% 2	5.32% 10	18.62% 35	5.85% 11	17.55% 33	12.77% 24	188

### Q5 Average passenger capacity for each ship type.

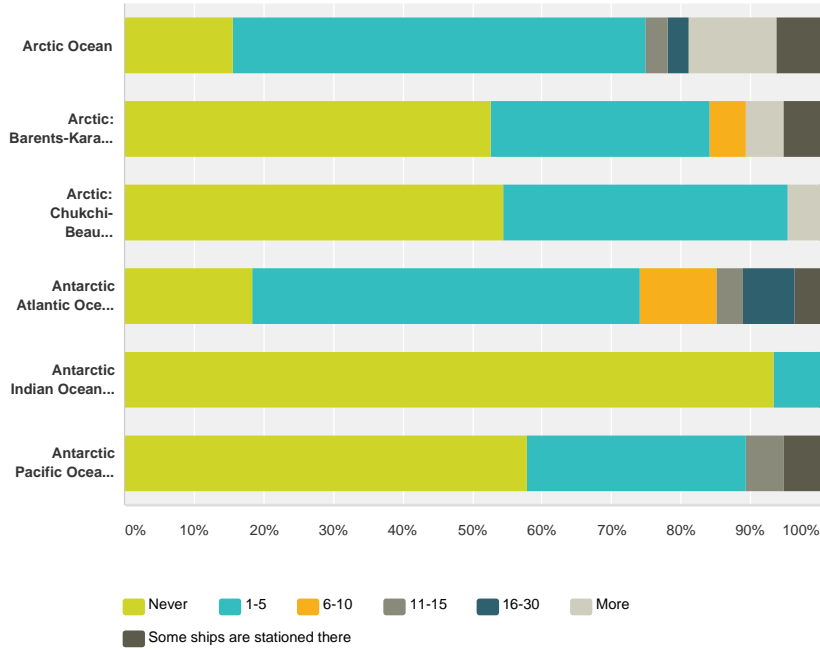
Answered: 43 Skipped: 23

Answer Choices	Responses	
Type of ship 1	100.00%	43
Type of ship 2	41.86%	18
Type of ship 3	23.26%	10
Type of ship 4	11.63%	5
Type of ship 5	6.98%	3
Type of ship 6	6.98%	3
Others or N/A ?	2.33%	1

#	Type of ship 1	Date
1	15-20	2/16/2017 12:58 PM
2	0-3 depending on production	2/15/2017 7:15 PM
3	0	2/15/2017 1:16 PM
4	15	2/13/2017 10:51 AM
5	Zero	2/13/2017 7:37 AM
6	100 to 140	2/8/2017 9:42 AM
7	9 preferably (12 max)	2/1/2017 2:21 PM
8	varies	1/27/2017 9:44 PM
9	8 passengers	1/22/2017 8:04 PM
10	4 crew plus 18 supernumary - total 22	1/19/2017 9:12 PM
11	50	1/19/2017 5:02 PM
12	Passenger ship 500 pax	1/19/2017 7:53 AM
13	120	1/19/2017 4:19 AM
14	17 + 11 crew	1/18/2017 10:49 PM
15	12	1/18/2017 10:10 PM
16	22	1/18/2017 10:00 PM
17	42	1/18/2017 8:21 PM
18	10	1/18/2017 11:18 AM
19	10	1/18/2017 3:34 AM
20	16	1/17/2017 10:56 PM
21	40	1/17/2017 7:54 PM
22	2	1/17/2017 6:29 PM
23	52	1/17/2017 6:17 PM
24	zero	1/17/2017 3:25 PM
25	max 50 researchers	1/17/2017 2:26 PM

### Q6 Which areas of the Polar regions do your vessels frequent and how many times per year?

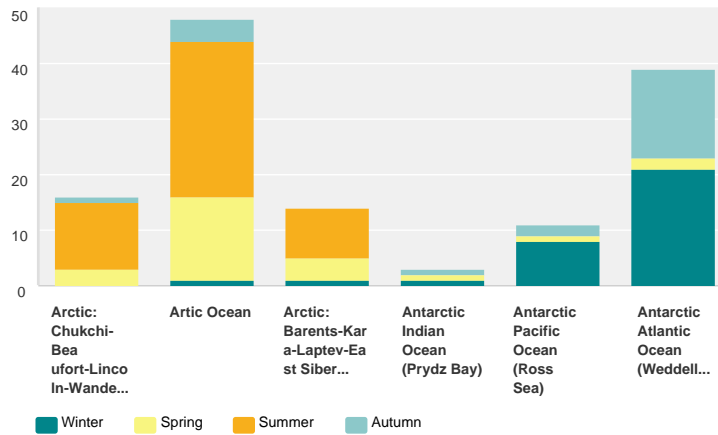
Answered: 37 Skipped: 29



	Never	1-5	6-10	11-15	16-30	More	Some ships are stationed there	Total
Arctic Ocean	15.63% 5	59.38% 19	0.00% 0	3.13% 1	3.13% 1	12.50% 4	6.25% 2	32
Arctic: Barents-Kara-Laptev-East Siberian Seas	52.63% 10	31.58% 6	5.26% 1	0.00% 0	0.00% 0	5.26% 1	5.26% 1	19
Arctic: Chukchi-Beaufort-Lincoln-Wandel Seas	54.55% 12	40.91% 9	0.00% 0	0.00% 0	0.00% 0	4.55% 1	0.00% 0	22
Antarctic Atlantic Ocean (Weddell Sea)	18.52% 5	55.56% 15	11.11% 3	3.70% 1	7.41% 2	0.00% 0	3.70% 1	27
Antarctic Indian Ocean (Prydz Bay)	93.33% 14	6.67% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	15
Antarctic Pacific Ocean (Ross Sea)	57.89% 11	31.58% 6	0.00% 0	5.26% 1	0.00% 0	0.00% 0	5.26% 1	19

### Q7 What time of year do you visit these Polar regions?

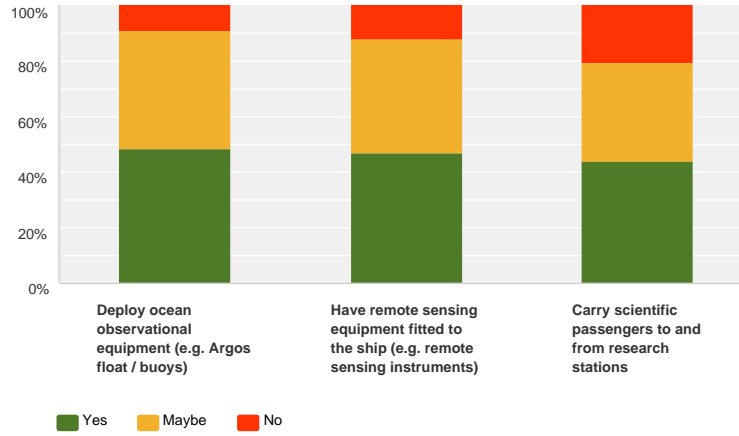
Answered: 38 Skipped: 28



	Winter	Spring	Summer	Autumn	Total Respondents
Arctic: Chukchi-Beaufort-Lincoln-Wandel Seas	0.00% 0	23.08% 3	92.31% 12	7.69% 1	13
Arctic Ocean	3.45% 1	51.72% 15	96.55% 28	13.79% 4	29
Arctic: Barents-Kara-Laptev-East Siberian Seas	8.33% 1	33.33% 4	75.00% 9	0.00% 0	12
Antarctic Indian Ocean (Prydz Bay)	50.00% 1	50.00% 1	0.00% 0	50.00% 1	2
Antarctic Pacific Ocean (Ross Sea)	80.00% 8	10.00% 1	0.00% 0	20.00% 2	10
Antarctic Atlantic Ocean (Weddell Sea)	91.30% 21	8.70% 2	0.00% 0	69.57% 16	23

**Q8 If all liability and insurance issues can be dealt with by the science partner, would your fleet be interested, and able to:**

Answered: 34 Skipped: 32



	Yes	Maybe	No	Total
Deploy ocean observational equipment (e.g. Argos float / buoys)	48.48% 16	42.42% 14	9.09% 3	33
Have remote sensing equipment fitted to the ship (e.g. remote sensing instruments)	47.06% 16	41.18% 14	11.76% 4	34
Carry scientific passengers to and from research stations	44.12% 15	35.29% 12	20.59% 7	34

**Q9 If you are able to provide any of these services, who would be the contact to explore this further?**

Answered: 28 Skipped: 38

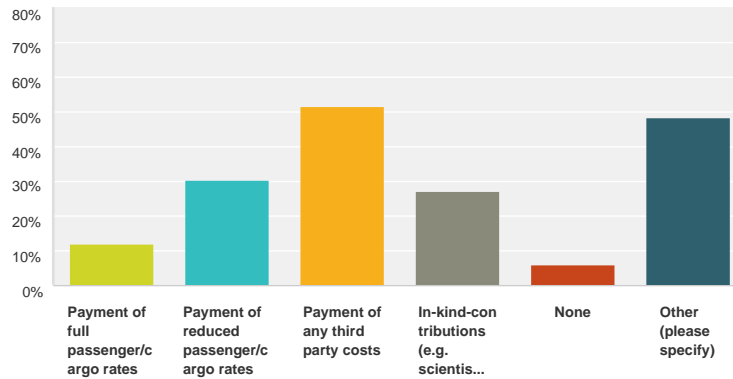
Answer Choices	Responses	
Name	100.00%	28
Job Title	96.43%	27
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	96.43%	27
Phone Number	85.71%	24

#	Name	Date
1	Camilla Thiele	2/16/2017 1:04 PM
2	Mikael Thinghuus	2/15/2017 7:18 PM
3	JM Letournel	2/8/2017 9:47 AM
4	Ben Wallis	2/1/2017 2:26 PM
5	Captain David (Duke) Snider	1/27/2017 9:46 PM
6	Laura Smith	1/22/2017 8:07 PM
7	Adrian Schimnowski	1/19/2017 9:16 PM
8	Kelvin Murray	1/18/2017 10:12 PM
9	Michele Rebesco	1/18/2017 10:05 PM
10	Leentje Toering	1/18/2017 8:24 PM
11	Dupuis	1/18/2017 3:39 AM
12	Michael Klages	1/17/2017 11:03 PM
13	Rob Christie	1/17/2017 7:58 PM
14	Tomas Holik	1/17/2017 6:22 PM
15	Ulf Hedman	1/17/2017 2:28 PM
16	Robin West	1/17/2017 11:53 AM
17	Diana Galimberti	1/17/2017 11:36 AM
18	Kerstin Tewel	1/17/2017 9:18 AM
19	Mark van der Hulst	1/17/2017 8:13 AM
20	Bill Davis	1/17/2017 7:35 AM
21	Anja Erdmann	1/4/2017 2:26 PM



**Q10 If you are able to provide any of these services (e.g. hosting or deploying instruments, hosting scientists), what would be your expected recovery of the associated costs?**

Answered: 33 Skipped: 33



Answer Choices	Responses
Payment of full passenger/cargo rates (1)	12.12% 4
Payment of reduced passenger/cargo rates (2)	30.30% 10
Payment of any third party costs (3)	51.52% 17
In-kind-contributions (e.g. scientist giving a talk on a cruise ship) (4)	27.27% 9
None (5)	6.06% 2
Other (please specify) (6)	48.48% 16
<b>Total Respondents: 33</b>	

Basic Statistics				
Minimum 1.00	Maximum 6.00	Median 3.00	Mean 3.74	Standard Deviation 1.64

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## ANNEX C: THE OUTREACH

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News Release

### [WOC AND EU-POLARNET LAUNCH GLOBAL SURVEY TO ADVANCE INDUSTRY/SCIENCE COLLABORATION ON POLAR DATA COLLECTION](#)

[If you are a member of the polar and ocean business community, we need your feedback!](#)

**12 December 2016**

**The World Ocean Council (WOC) and EU-PolarNet are reaching out to the polar and ocean businesses community to [identify opportunities to collaborate on data collection in support of improved science and sustainable development](#).**

**To advance this collaboration, the polar and ocean business community is invited to participate in the [WOC/EU PolarNet survey on vessels in polar regions](#). [If you are part of the polar and ocean business community which includes shipping but also fishing, tourism, extractive industries \(minerals, oil & gas\) and other activities, whether or not you are in the EU, your input to this survey will be precious. We also invite you to spread the word if you know companies and industries in the Polar regions!](#)**

EU-PolarNet is the world's largest consortium of expertise and infrastructure for polar research, representing 22 research institutions from 17 European countries, supported by Horizon 2020. The WOC is the EU-PolarNet industry partner, working to foster and facilitate private sector interaction with the polar research community.

*Expanding the scope and scale of polar ocean and atmosphere observations is essential to improved understanding, modelling, and predicting of conditions in these areas. This will in turn reduce risks to industries operating in polar areas.*

*There are important opportunities for science and industry to collaborate in the use of 'ships of opportunity' to facilitate data collection and achieve the mutual benefits of increased and improved information from polar areas.*

[The present survey builds on the discussions on "Polar Region Sustainable Development: Business and Science Collaboration in the Arctic and Antarctic" at the recent WOC Sustainable Ocean Summit \(SOS\).](#)

The survey also contributes to the WOC *Smart Ocean-Smart Industries* program, which is working to systematically scale up industry involvement in data collection worldwide.