

ERVO Ad-hoc WG

European RVs economics, management processes and spare capacity

Webinar
28 April 2022



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Introduction

During the last 25+ years, the European RV community has become well organized, developed a number of «tools», successfully initiated four EU-funded projects and published two EMB position papers:

- Ocean Facilities Exchange Group (OFEG) established in 1996
- European Research Vessel Operators (ERVO) established in 1999
- EurOcean established in 2002
- European Marine Board Position Paper 10 (EMB PP 10) published in 2007
- Project Eurofleets (2009 – 2013), Eurofleets2 (2013 – 2017) and Eurofleets+ (2019 – 2023)
- EMB PP 25 published in 2019
- Project ARICE (2018 – 2022)

A lot of progress is made with regards to better coordination and utilization of the European RVs and Large EXchangeable Instruments (LEXI), but there are still differences in RV management, funding, scheduling, operating costs, spare capacities etc that could be worthwhile to explore further.



Research Vessel (RV) cost data and spare capacity

- As part of the Eurofleets+ Work Package (WP) 8 – Eurofleets Legacy, Deliverable 8.3 – “Report on feasibility study for implementation of a transnational access system, including business plan”, it was decided to set up an ERVO ad-hoc working group to collect and analyse cost data and spare capacity for European Research Vessels (RVs).
- The work has been done by Per W. Nieuwejaar, IMR, Norway and Lorenza Evangelista, CNR, Italy.
- The data collected will be used to implement step 3 of Eurofleets+ WP 8 Step 3 “Transnational Access (TA) pilot groups: Opening to spare vessel capacity” starting in June 2022 and ending in October 2023:

“Pilot groups, at both pan-European and Regional dimensions or for thematic area, based on the spare vessel capacity will be identified to be the test-bed for the developed operational and funding model with the goal of stepping forward the European Research Area (ERA) key priorities and supporting “scientific super idea/excellence science”. Based on a trustful relationship with ERVO, this activity could be developed within the ERVO “Regional focus” workshop.”



RVs included in the study

- The operators of the 99 ERVO «certified» RVs listed in the European Marine Board (EMB) Position Paper 25 «European Research Vessels – Current status and Foreseeable Evolution» was asked to provide data regarding crew size and composition, daily rates and spare cruise days capacity.
- Data for 60 RVs from 21 countries were received and analysed.
- The RVs were divided into the following categories: Global (15), Ocean (11), Regional (21) and Coastal (13):
- Global: Kronprins Haakon (NO), G.O. Sars (NO), Dr. Fridtjof Nansen (NO), Laura Bassi (IT), Sarmiento de Gamboa (ESP), Maria S. Merian (GE), Meteor (GE), Sonne (GE), Polarstern (GE), Pelagia (NL), Discovery (UK), James Cook (UK), Marion Dufresne (FR), Pourquoi Pas? (FR), L'Atalante (FR)
- Ocean: Johan Hjort (NO), Kristine Bonnevie (NO), Helmer Hanssen (NO), Aranda (FI), Tarajoq (GL), Mario Ruivo (PT), Celtic Explorer (IRE), Dana (DK), Belgica (BE), Svea (SW), Thalassa (FR)
- Regional: GM Dannevig (NO), Garcia del Cid (ESP), Simon Stevin (BE), Alkor (GE), SOCIB (ESP), Celtic Voyager (IRE), Tom Crean (IRE), Oceania (PL), Aegaeo (GR), G. Dallaporta (IT), Mare Nigrum (RO), Havfisken (DK), Heincke (GE), Trygve Braarud (NO), Ocean Surveyor (SW), Tubitak Marmara (TU), Skagerak (SW), BIOS DVA (CR), Ludwig Prandtl (GE), Antea (FR), L'Europe (FR)
- Coastal: Hans Brattström (NO), Salme (EST), Littorina (GE), Sanna (GL), Seisma (NO), Philia (GR), Istros (RO), Mintis (LIT), Tubitak Anadolu (TU), Côte de La Manche (FR), Thalia (FR), Tethys (FR), Haliotis (FR)



Crew size and composition

RV Class	Deck officers	Marine engineering	Catering	Deck ratings	Crew	Marine technicians
Global - Range	3 - 7	2 - 11	2 - 11	4 - 15	11 - 39	0 - 11
Global - Average	4	4	5	9	21	3
Ocean - Range	2 - 4	2 - 6	2 - 4	3 - 9	9 - 22	0 - 10
Ocean - Average	3	3	3	5	14	2
Regional - Range	1 - 6	1 - 7	1 - 5	1 - 6	3 - 21	0-5
Regional - Average	3	2	1	3	12	1
Coastal - Range	1 - 3	0 -2	0 - 1	1 - 5	1 - 9	0 - 7
Coastal - Average	2	2	1	2	6	2

Large variations in crew size for the different crew categories for all RV categories.

Probably due to:

- 2 or 3 watch system (12 or 8 working hours pr day pr person)
- National legislation with regards to manning requirements
- Union agreements
- Other?



Operating days and spare capacity

RV Class	Cruise days	Spare capacity
Global - Range	209 - 332	0 - 14
Global - Average	289	11 (3 of 15 RVs)
Ocean - Range	120 - 300	0 - 160
Ocean - Average	211	56 (8 of 11 RVs)
Regional - Range	90 - 320	0 - 150
Regional - Average	198	74 (13 of 21 RVs)
Coastal - Range	30 - 309	0 - 100
Coastal - Average	169	50 (8 of 13 RVs)

- Some reports that number of spare days could be increased with approx 150 days if a second crew is employed.
- Very little spare capacity for a small number of Global Class RVs.
- A fair amount of spare capacity for the other RV Classes in terms of no of RVs and no of days.



Operating costs

RV Class	Daily cost (€)
Global - Range	20.995 - 80.000
Global - Average	31.880*
Ocean - Range	18.000 - 26.175
Ocean - Average	21.305
Regional - Range	3.440 - 16.800
Regional - Average	8.434
Coastal - Range	3.400 - 9.500
Coastal - Average	5.782

Major cost elements are usually: Crew, Fuel, Maintenance and Other

«Rules of thumb»: Crew cost 40 – 60%, Fuel cost 20 – 30%, Maintenance 10-15%, Other 10-15%

Crew is therefore in most cases the dominant factor, depending on number of crew and crew salaries which is national and partly operator controlled cost element.

Other cost elements have more or less the same prices on an international level.

* If the four most expensive Global RVs (32.800 - 80.000) are deleted the average daily rate is reduced to 26.727. If only the RV with the highest daily rate (80.000) is deleted the average daily rate for Global Class vessels is 28.443.

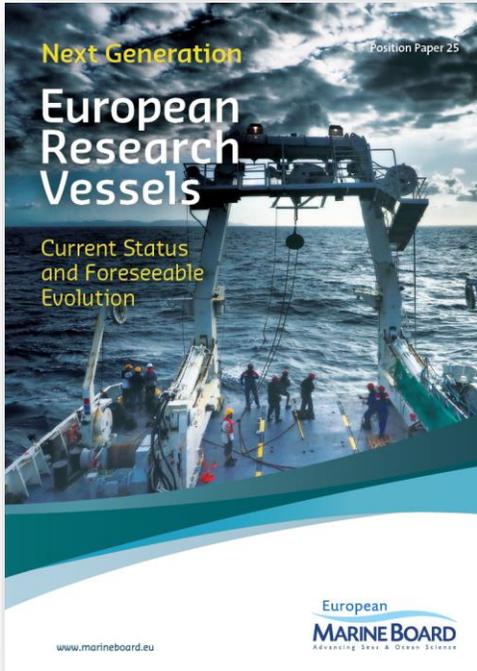


Conclusions RV Cost and Spare Capacity

- Large variations in crew size for the different crew categories for all RV categories.
- Some spare capacity for a small number of Global Class RVs and a fair amount of spare capacity for the other RV Classes in terms of no of RVs and no of days.
- Crew is in most cases the dominant cost factor, depending on number of crew and crew salaries which is national and partly operator controlled cost element.
- Other cost elements (fuel, provisions, travel, maintenance, spare parts etc) have more or less the same prices on an international level.



European RVs management processes



7
Management processes
in the countries and
partnerships developed
in Europe



- ❑ Drafting the **EMB Position Paper #25**, in order to gain **insight into the management processes** that are currently in place for the European research fleet, **a survey was sent to a list of European RV operators.**
- ❑ **45 RV operators responded to the survey covering 104 European RVs from 22 countries.**
- ❑ **A fundamental work has been done** with this survey and the associated outputs would deserve to be kept updated in the future, and maybe even enlarging the scope of the survey to include, for example, the challenges the European RV operators face and possible options they envision.
- ❑ **Having a document, which expresses the practices and thoughts of the European RV operators, seems like an important thing to have by itself in this landscape.**

Questionnaire on the description of present national management processes of European Research Vessels and marine support personnel training

As part of the activities of the European Marine Board (EMB) Working Group "Next Generation European Research Vessels" <http://marineboard.eu/european-research-vessels> which aims to review the current status of European Research Vessels and related equipment, evaluate the progress made since the previous EMB Position Paper 10 in 2007 and produce an updated foresight report, this questionnaire aims to collect up-to-date information on the national management of the European research fleets, including funding mechanisms, investment plans, collaborations and partnerships, training options and opportunities for marine science support personnel, as well as marine technicians, marine crew and shore-based staff.

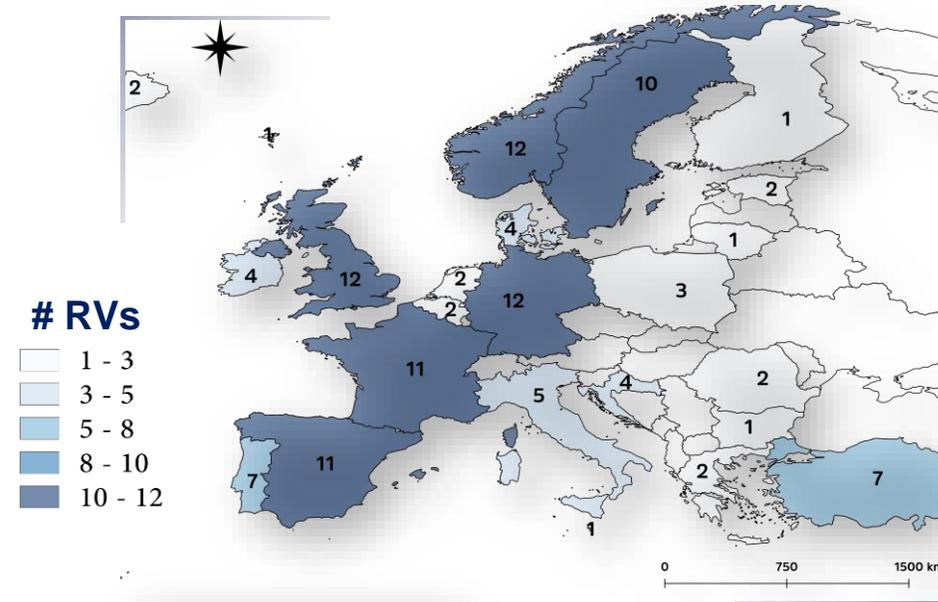
The questionnaire is divided in 9 short sections:

1. General questions on national research vessel management
2. Application process for granting ship-time
3. Vessel and equipment replacements or new builds
4. Cruise support process and equipment
5. Training of support staff: marine technicians
6. Training of support staff: marine crew
7. Training of support staff: shore-based staff
8. Future opportunities
9. Contact information and consent



No. of RV operators and RVs approached

- ✓ # 73 RVs operators
- ✓ # 119 RVs
- ✓ # 24 countries

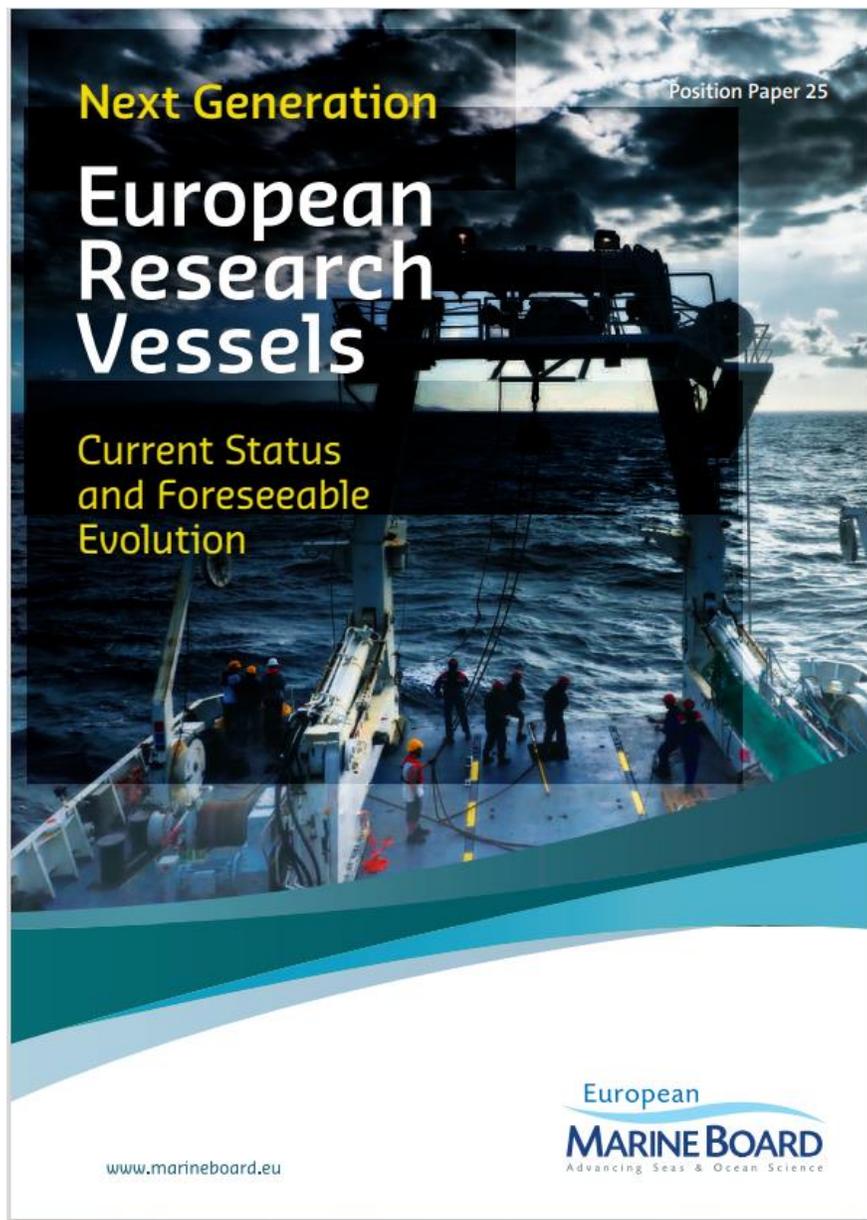


Launch of survey

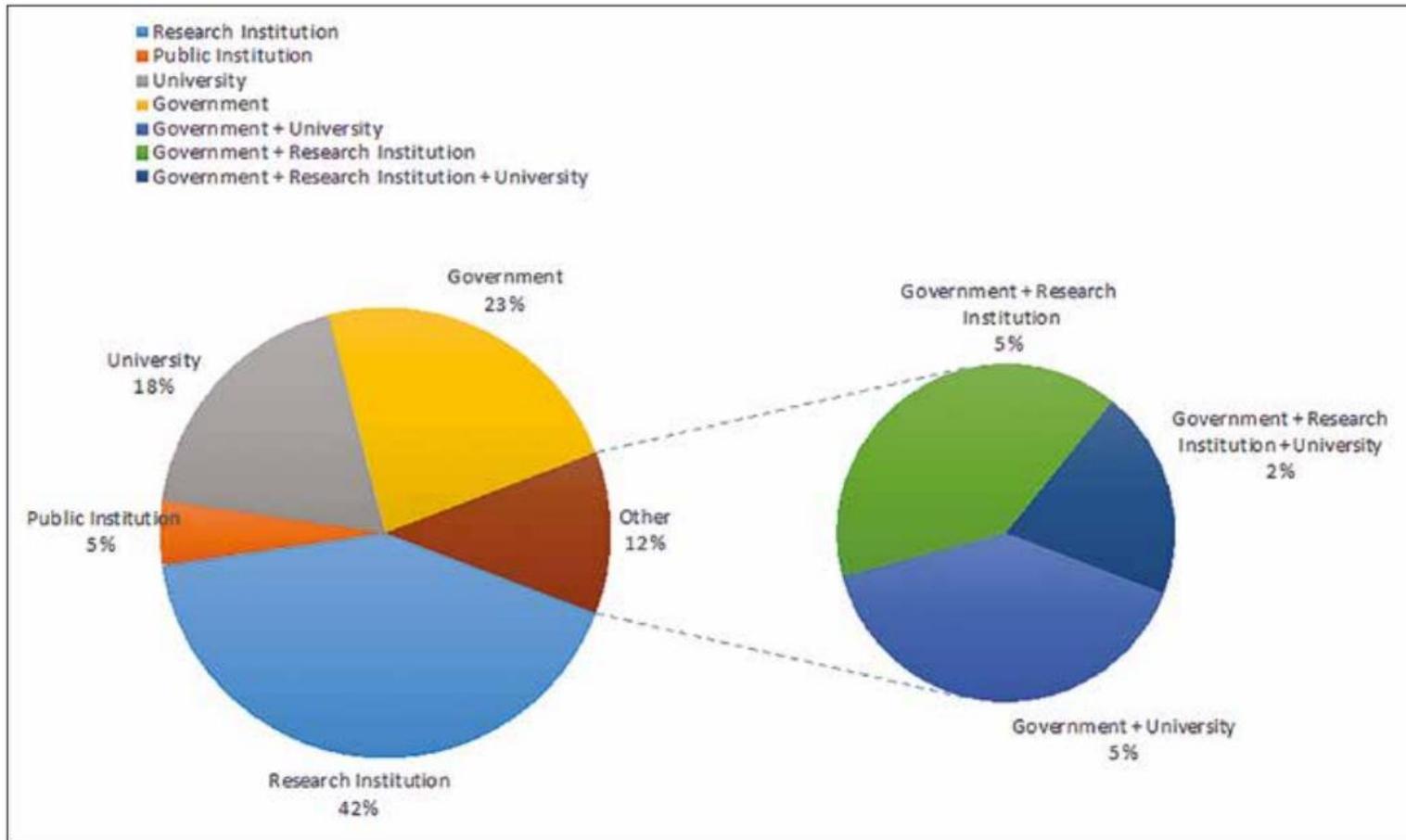
Closure of survey



Key findings published in EMB PP 25 Ch 7



RV ownership



Most European RVs are owned by public bodies (Government, Universities, Federal States, Ministries or Navies) and some are co-owned by two or more institutions. Multinational co-ownership is almost non-existent.

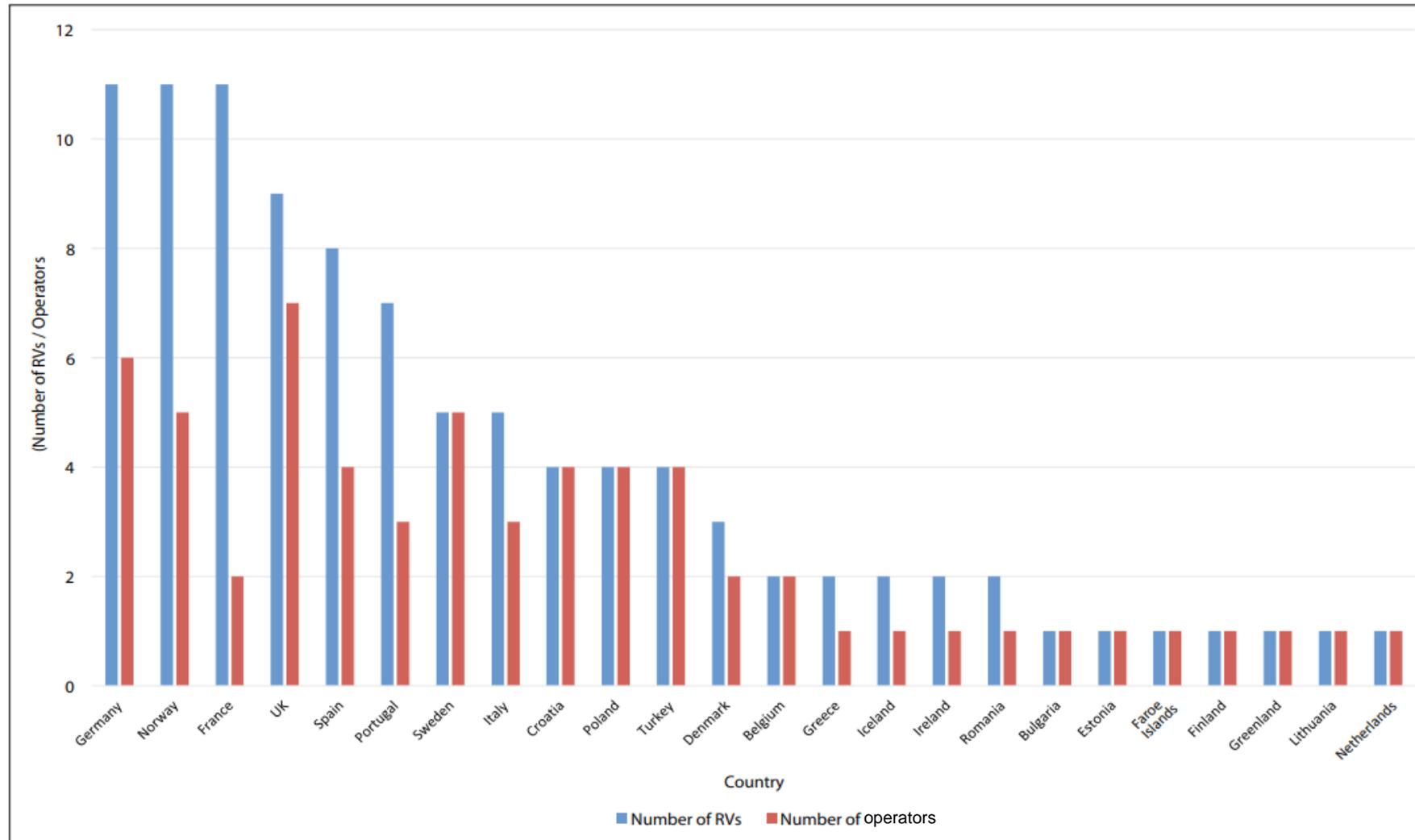


Funding

- Funding for new RVs are mainly coming from the Government 36 of 42 (86%) answers and in 6 of 42 (14%) answers from universities.
- Funding for running costs varies from full government funding, to a combination of government funding, charter cruises, EU projects and internal funds.
- Funding for approved cruises are in 28 of 41 (68%) answers automatically covered.
- Funding for logistics for approved cruises are in 27 of 34 (79%) answers not automatically covered.



Distribution of research vessel operators



62 different research vessel operators manage the 99 RVs from 23 European countries



Barter/charter/co-operation arrangements

- Eurofleets + (European RVs - ending October 2023)
Greenland, Iceland, Faroes, Norway, Denmark, Finland, Germany, Belgium, Netherlands, France, Spain, Portugal, Italy, Greece, Romania, Turkey
- OFEG
UK, France, Germany, Spain, Netherlands, Norway
- Bonus (Ended 2021)
Denmark, Germany, Sweden, Estonia, Latvia, Lithuania, Finland, Poland
- National barter/charter programs
- This means that from 2024 the only operational charter/barter/TNA options are OFEG and bilateral agreements on a case by case basis.
- If the Eurofleets RI is established as proposed by Eurofleets+, it will function as a «market place» for TNA, charter and barter cruises.,



Online cruise application and application deadlines

- Marine Facilities Planning (MFP) in use by 8 European RV operators (see next slide).
- 12 RV operators answer that they have another type of online system.
- 25 RV operators answer that they do not use an online system for cruise applications and cruise management.
- Application deadlines varies very much, but typically during year -1 or a few weeks/months before cruise start. Some have no set deadline.



Scheduling – MFP users



Training opportunities

- There are sufficient training opportunities for marine technicians:
Agree: 15 (37,5%), Disagree: 24 (60%), Neither: 11 (27,5%)
- There are sufficient opportunities available to train shore-based staff (research vessel coordinators and superintendents) in the management of research vessel operations:
Agree: 9 (20%), Disagree: 18 (40%), Neither: 18 (40%)
- There are sufficient opportunities available to train research vessel (deckhands or navigators) in the operation or deployment of marine research equipment:
Agree: 16 (36%), Disagree: 14 (31%), Neither: 15 (33%)



Conclusions

- European RVs are generally owned by a public body, often a research institution.
- The management processes differ by country, from a centralized management of almost all RVs (e.g. France, Germany and Norway) to nations with up to 7 different operators (e.g. UK).
- Research vessel management processes, such as funding, scheduling and cruise planning, technical and logistic support demonstrate a similar diversity, depending on the country's science budgets, fleet size, and areas and periods of operation.
- The level of service provided for the science party varies, but technical support by vessel staff on board is often automatically included in a cruise. However, if ownership is distributed, the science party may be responsible for the technical support themselves.
- Within Europe, collaboration is a key issue. Since 2007, several formal and informal collaborations and partnerships have developed to enhance the use of vessels and equipment, and stimulate interoperability



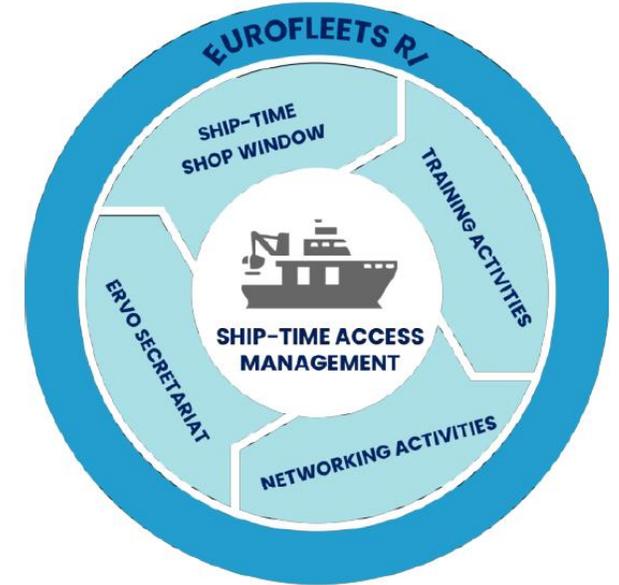
Recommendations

- Given its size, the European research vessel fleet as a whole has huge potential for more cost-effective use of RVs and equipment including LEXI, which could be realized if countries would be more willing to pool resources. Some cooperation already exists for Global and Ocean Class vessels, but collaboration on a regional level is limited;
- Sharing resources would also be efficient at a national level, creating national pools of equipment, marine technicians and trained vessel crew. For countries with a relatively small RV fleet and few instruments, cooperation with neighbouring countries could be an alternative;
- Using common cruise management and planning tools can make it easier to exchange information about planned utilization and deployment of RVs and LEXI. Available capacity can then be easily recognized and requested by those needing ship-time or access to LEXI;
- Transnational Access (TA) to RVs and LEXIs, such as in EUROFLEETS+ and ARICE should continue to be supported to enlarge the community of users and foster scientific exchange, collaboration and excellence at European and international level (Eurofleets RI).



Way ahead

- Eurofleets+ WP 8 «Eurofleets legacy» - Recommendations for the establishment of an Eurofleets RI will hopefully end up as the «roadmap» for continued networking, sharing of best practices, Transnational Access (TA), barter and charter activities etc. with regards to the European RVs and LEXI.
- In the mean time, before an Eurofleets RI is established some years from now, it would be very useful to repeat the exercise of collecting data about RV manning, daily cost, ownership, funding schemes, operator organizations, cruise scheduling etc to monitor the trends and build an even better understanding of the similarities and differences across Europe, in particular after the end of Eurofleets+ in October 2023.
- Maybe an update of the EMB PP 25 in a couple of years time would be beneficial to keep the ERVO community, the marine science community, funding agencies and others updated on the trends with regards to new technology, new “business opportunities” etc?





Thank you for your attention!

