Evaluation of the ‘German Marine Research Alliance’ (DAM)

Evaluation report

Kienbaum

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List of abbreviations

Abbreviation	Meaning
ABC/J	Geoscientific network of the Aachen-Bonn-Köln-Jülich research region
ADCP	Acoustic Doppler Current Profiler
AG/WG	Working Group
AWI	Alfred Wegener Institute for Polar and Marine Research
BMBF	Federal Ministry of Education and Research
CCS	Carbon Capture and Storage
DAM	German Marine Research Alliance
EU	European Union
EUR	Euro
FAIR	FAIR principles (Findable, Accessible, Interoperable, Reusable)
GEOMAR	Helmholtz Centre for Ocean Research Kiel
IOC	Intergovernmental Oceanographic Commission
IOOI	Input, Output, Outcome, Impact
JASADCP	Joint Archive Shipboard Acoustic Doppler Current Profilers
KDM	German Marine Research Consortium
KMU	Small and medium-sized enterprises
MGF	Mobile ground-touching fishing
NFDI	National research data infrastructure
OBIS	Ocean Biodiversity Information System
ODK	German Ocean Decade Committee
SDGs	Sustainable Development Goals
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VV-DAM	Administrative Agreement on the Establishment and Promotion of a German Marine Research Alliance
ZMT	Leibniz Centre for Tropical Marine Research

1. Initial situation

1.1. Background and objectives of the DAM

1.1.1. Foundation of the DAM

The German Marine Research Alliance (DAM) e.V. was founded in July 2019 as a registered association, based on an agreement between the Federal Government and the five northern German states: the Free Hanseatic City of Bremen, the Free and Hanseatic City of Hamburg, Mecklenburg-Western Pomerania, Lower Saxony, and Schleswig-Holstein (Administrative Agreement, Preamble, p. 1). According to the *Administrative Agreement on the Establishment and Promotion of a German Marine Research Alliance (VV-DAM),* the DAM's primary objective is '(...) to further expand the leading international position of German marine research, strengthen Germany as a scientific location, and contribute to research on global climate change' (Administrative Agreement, Preamble, p. 1).

The establishment of the DAM resulted from an intensive dialogue about the current framework conditions and future potential of German marine research. The Administrative Agreement explicitly acknowledges this foundation, referencing structural analyses by the German Council of Science and Humanities (2010) and the Scientific Commission of Lower Saxony (2013), along with preliminary work within the scope of the Marine Research Forum and the German Marine Research Consortium (KDM) (Administrative Agreement, Preamble, p. 1).

The *structural analysis of the Scientific Commission of Lower Saxony*[1] , praises the international competitiveness of German marine research, among other things, but identifies the fragmented institutional, financial and governance structures as obstacles to exploiting its full potential[2] (Strukturanalyse WK NI, p. 13). To overcome these challenges, the analysis emphasized the need for a strong, unified coordinating organization with clear leadership and decision-making powers[3] (Strukturanalyse WK NI, p. 10).

[1] Strukturanalyse der Meeresforschung in Norddeutschland (2013) / Structural analysis of marine research in northern Germany (2013): https://www.wk.niedersachsen.de/taetigkeitsbereiche/forschungs_und_strukturevaluation/strukturanalyse_norddeutschen_forschungslandschaft/themenbezogene-verfahren-auf-norddeutscher-ebene-132237.html

[2] '(...) an unwieldy combination of institutional, financial and governance structures are constraining marine sciences and thereby preventing it from attaining its full potential. This is because marine research is conducted at a range of institutional types resulting in serious financial, administrative and scientific fragmentation. Research is performed in universities and non-university research institutions including the Helmholtz (HGF) and Leibniz (WGL) Association, the Max Planck Society (MPG) and certain Federal Research Agencies. These institutional affiliations are associated with different governance structures, research programs and funding systems. For example, whereas the HGF Centers are mainly supported by the federal government, the WGL and MPG are equally financed by both the federal and the state governments. In contrast, universities receive their base funding exclusively from the federal state of their location.' (p. 13 f.)

[3] 'In order to build up a unified and strong profile, German marine science will need to develop a strong coordinating organization with clear governance structures and decision-making authority.' (S. 10)

1.1.2. Objectives of the DAM

The German Marine Research Alliance is one of the most important marine research alliances in the world and yet is unique in its organizational structure and objectives.[4] Its central aim is to combine the expertise and knowledge of leading marine research institutions in order to provide sound guidance and practical solutions. This knowledge is intended to help support political and social decisions that promote the sustainable management of coasts, seas and oceans.

The administrative agreement, § 1 Tasks and objectives of the DAM, para. 1, 2 and 3, p. 2, defines the following core objectives of the DAM:

> *'(1) The DAM is a platform for the coordination and strategic development of German marine research. It addresses the future issues of marine research at the highest scientific level with an overarching approach and provides actionable knowledge for politics, business and civil society. In doing so, it also increases the international effectiveness and visibility of marine research.*
>
> *(2) The DAM serves to strengthen cooperation between the non-university marine research institutions and the universities of the northern German federal states in subject areas of national and global importance. The DAM creates added value in terms of content and organization, in particular by creating interfaces between the research institutions and universities and leveraging synergy effects. Existing structures in the science system are to be supplemented by overarching networking and cooperation between the universities and research institutions involved in marine research and by focusing on the effective transfer of research results.*
>
> *(3) The DAM aims to increase the strategic capacity for action of marine science institutions in Germany through joint research programmatic goals and activities and improved framework conditions. The DAM is particularly active in the following core areas: Research (...), coordination of infrastructures (...), data management and digitization (...), transfer (...).'*

These objectives are set out in the statutes of the DAM. Accordingly, the association's purpose and task is to promote science and research (§ 52 para. 2 sentence 1 no. 1 AO). This purpose is realised in particular by strengthening German marine research. The statutes also set out the specific objectives of the DAM, such as

- improved cooperation and coordination between the various players active in marine research
- further increasing the international effectiveness and visibility of German marine research and
- advising decision-makers and other institutions on marine science issues.

To achieve these goals, the DAM is dedicated to the following core areas:

[4] Other organizations, networks and alliances that are dedicated to topics at the interface of marine/ocean/coastal research in an alliance of various members from research, business, administration and civil society include the German Marine Research Consortium (KDM), the Alliance for Coastal Technologies (ACT) and the National Oceanographic Partnership Program (NOPP).

- **Core area – research:** ‘Continuous coordination, planning and implementation of joint marine science research missions on socially relevant topics’
- **Core area – coordination of infrastructure**: ‘Development of strategies to optimize joint use and further development of use concepts for large research infrastructures’
- **Core area – data management and digitization**: ‘Development of strategies to optimize sharing and further development of usage concepts for large research infrastructures’
- **Core area – transfer**: ‘Development and maintenance of communication platforms and participation formats for sustainable exchange between science and society and active cooperation with decision-makers in politics, administration and business’ (DAM statutes, p. 2)

1.2. Institutional framework and organization of the DAM

1.2.1. Institutional framework conditions of the DAM

The DAM is legally constituted as a registered association (Administrative Agreement, Section 2 Structure and Committee Structure, Para. 1, p. 4). The DAM exclusively and directly pursues charitable purposes within the meaning of the German Tax Code. Members of the DAM do not receive any benefits from the association's funds, which may only be used for statutory purposes (DAM Articles of Association, p. 1).

1.2.2. Membership in the DAM

DAM member organisations are German university and non-university research institutions that conduct internationally recognised, high-quality marine research. Applications for membership must be submitted to the General Assembly, along with a proposal for a decision by the Administrative Council. Membership is then granted by resolution of the General Assembly. Other German university and non-university (departmental) research institutions may also be accepted as associate members, but they will not have voting rights (Statutes, § 3 Membership, para. 1, 2, p. 3).

As an association, the DAM collects contributions from its members in order to fulfil its statutory purposes (in particular to finance the activities of the office) (Administrative Agreement, p. 6). The amount of the annual membership fee is determined by the membership fee regulations in accordance with § 3 Para. 4 of the DAM statutes, taking into account the capacity of the member institutions (Administrative Agreement, § 3 Financing, Para. 4, p. 6); The General Assembly decides on the amount of the membership fee, with the approval of the DAM Administrative Board also being required (Membership Fee Regulations, § 2 Resolutions, p. 1). Associate members are exempt from paying membership fees (Membership Fee Regulations, § 1 Object, para. 1, p. 1).

Members are obliged to support the objectives and interests of the DAM and to comply with the resolutions and instructions of the association's bodies (Articles of Association, Section 4 Duties of Members, Para. 1, p. 4).

At the time of the evaluation, the DAM comprised 25 members, including university and non-university research institutions, departmental research institutions, and research museums. Eighteen of these were full members and seven were associated members.

Full members:

- AWI | Alfred Wegener Institute Helmholtz Center for Polar and Marine Research
- CEN | Center for Earth System Research and Sustainability, University of Hamburg
- Fraunhofer | Fraunhofer Society for the Advancement of Applied Research
- FZK | Coastal Research Center of Leibniz Universität Hannover and Technische Universität Braunschweig
- GEOMAR | Helmholtz Center for Ocean Research Kiel
- Hereon | Helmholtz Center Hereon
- ICBM | Institute for Chemistry and Biology of the Marine Environment, Carl von Ossietzky University Oldenburg
- IOW | Leibniz Institute for Baltic Sea Research Warnemünde
- KMS | Kiel Marine Science, Christian-Albrechts-Universität zu Kiel
- MARUM | Center for Marine Environmental Sciences at the University of Bremen
- MPI-MM | Max Planck Institute for Marine Microbiology
- MPI-M | Max Planck Institute for Meteorology
- MTS | Department of Maritime Systems, University of Rostock
- SAM | Senckenberg am Meer, Senckenberg Society for Nature Research
- Thünen | Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries
- TiHo | University of Veterinary Medicine Hannover Foundation, Institute for Terrestrial and Aquatic Wildlife Research
- UG | University of Greifswald
- ZMT | Leibniz Center for Tropical Marine Research

Associated members:

- BAW | Federal Waterways Engineering and Research Institute
- BGR | Federal Institute for Geosciences and Natural Resources
- BSH | Federal Maritime and Hydrographic Agency
- DMM | German Oceanographic Museum Stralsund
- DSM | German Maritime Museum - Leibniz Institute of Maritime History
- NLWKN | Lower Saxony State Agency for Water Management, Coastal Defence and Nature Conservation
- UBA | Federal Environment Agency

The DAM also has two strategic partners that complement its marine research with sustainability research:

Strategic partners:

- IDOS | German Institute of Development and Sustainability
- RIFS | Research Institute for Sustainability, Helmholtz Center Potsdam

1.2.3. Organization and structure of the DAM

The central bodies of the DAM are the General Assembly, the Executive Board, the Administrative Council and the International Advisory Board. The DAM Articles of Association specify their function and tasks (§ 6 General Assembly, § 7 Executive Board, § 8 Administrative Council, § 9 International Advisory Board).

The following overview provides a graphic representation of the bodies and other committees and working groups (WGs) of the DAM and their interrelationships:

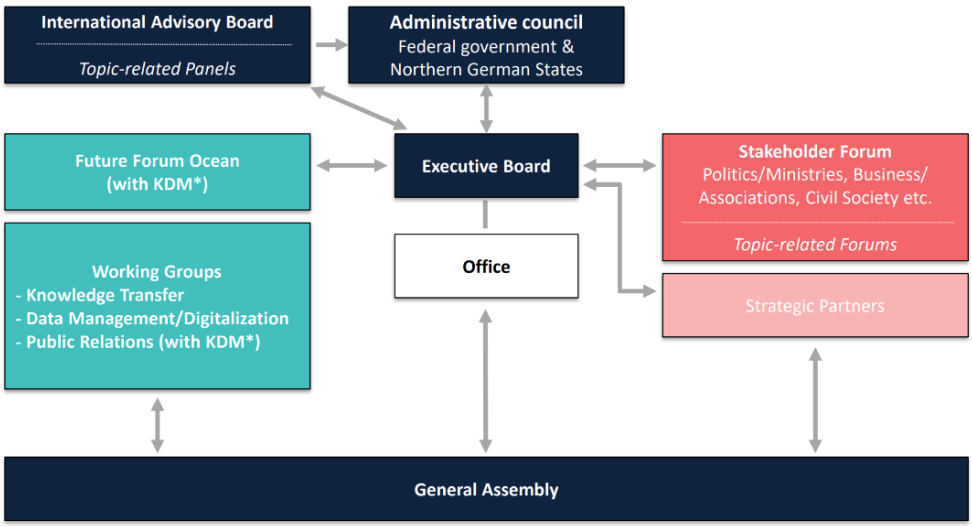

Figure1 Structure overview of the DAM

Source: DAM Annual Report 2023, p. 42

In addition to the bodies named in the Articles of Association, the following DAM forums and working groups have been set up:

Table1 Other DAM committees

Stakeholder forum	Serves cooperation and exchange with politics, civil society, business and other stakeholders.
Working groups	Working groups for data management and digitization, public relations and knowledge transfer, in which the member institutions of the DAM exchange their expertise and develop joint activities in their specialist areas.
Future Ocean Forum	Based at KDM, it serves as a joint forum/committee of KDM and DAM and aims to discuss and develop overarching scientific and strategic research topics in marine research.

Source: DAM Annual Report 2023, p. 41

1.3. DAM core areas and activities

DAM's portfolio of activities is organized around four core areas:

1.3.1. Core area: research

In the core area of research, the DAM is responsible for designing and coordinating recommendations for research missions, which are essentially long-term projects focusing on future topics in marine research (Administrative Agreement, Section 1 Tasks and Objectives of the DAM, Para. 3a).

At the time of writing, three interdisciplinary and transdisciplinary research missions are underway: CDRmare, SustainMare and MareXtreme.

The Federal Government's MARE:N research programme provides a thematic guideline for the DAM research missions. These missions are selected by the federal government and the northern German federal states, taking into account the assessment and expertise of the DAM bodies involved in the process of identifying topics, as well as other committees (particularly the International Advisory Board and the Stakeholder Forum). The DAM moderates the process.

1.3.2. Core area: coordination of infrastructure

In the core area of infrastructure coordination, the DAM coordinates the use of the large-scale marine equipment available to the German marine research community, developing comprehensive utilisation and operating concepts for this purpose. The aim is to promote the efficient use of infrastructure (Administrative Agreement § 1 Tasks and Objectives of the DAM, para. 3b)

1.3.3. Core area: data management and digitization

In the core area of data management and digitisation, the member institutions of the DAM collaborate with the support of the DAM Office to develop (Administrative Agreement § 1 Tasks and objectives of the DAM, para. 3c, p. 3):

> *'(...) an integrated, reliable and sustainable data management concept for the research landscape, coordinating open and uniform access in accordance with the FAIR principles. Within the network (...) the DAM develops standards that facilitate access to and use of decentralized data sets. The aim is to integrate and consolidate existing repositories (...) and strengthen links to national, European and international platforms. The DAM improves the capacity for systematic data collection and data analysis for ship expeditions and observatories (...). To this end, marine science research institutions within the Helmholtz Association are developing and implementing a data portal, as well as concepts to enhance data collection, analysis, and management capabilities.'*

1.3.4. Core area: transfer

In the core area of transfer, the DAM Secretariat and the DAM member institutions support and strengthen the transfer of topics, research questions and results to the areas of politics, business and society (Administrative Agreement § 1 Tasks and Objectives of the DAM, para. 3d, p. 4):

> *‘ The activities of the DAM, particularly the research missions, aim to facilitate the development of research and development projects in close collaboration with industry. The DAM conveys marine research topics as precautionary research to the public in suitable communication formats.’*

Additionally, the DAM office develops a strategic concept to promote young scientists and skills development, supporting its implementation in member research institutions.

1.4. Process for identifying topics and selecting research missions

The process of identifying and selecting topics for research missions takes a bottom-up approach that involves a broad range of stakeholders from various fields and areas of work, based on the research environment. The DAM office supports this process by coordinating, and sometimes moderating, the exchange between stakeholder groups.

The topics proposed through this process are ultimately discussed and decided upon by the federal government and the northern German federal states.

The typical topic identification and selection process, in accordance with the guideline Evaluation, assessment and decision-making procedures, comprises the following steps:

1. Initially, proposals for research missions are submitted primarily by scientists from DAM member institutions. Researchers at all career levels from the member institutions independently develop thematic proposals for future research missions. These proposals are then made available to all participants, who are asked to identify potential synergies and make adjustments or revisions if necessary. Further proposals can also be submitted by stakeholders (e.g. via the DAM Stakeholder Forum).
2. The proposals are then examined, analysed and discussed by the heads of the DAM member institutions, who finally evaluate them in an open strategic discussion based on the following criteria: relevance, needs orientation, scientific potential, added value for the scientific system and synergies. The proposers are then given the opportunity to revise the proposed topics, taking into account the heads of the member institutions' comments.
3. The DAM Executive Board reviews the proposed topics and decides whether to present them to the Stakeholder Forum.
4. The topics developed are presented to the Stakeholder Forum, which provides further technical input, advice and suggestions for improvement.
5. Based on this information, the General Assembly discusses the proposed topics and draws up recommendations, which are then forwarded to the International Advisory Board. Meanwhile, the proposers are given the opportunity to revise the topics, taking into account any additional suggestions received.
6. The International Advisory Board carries out an expert review and evaluates the relevance and scientific quality of the proposed topics. It also prioritises the topics and formulates further recommendations on this basis, submitting them to the General Assembly and the Administrative Council (DAM Statutes, Section 9 International Advisory Board, Para. 1, p. 8).
7. Finally, the Administrative Council ‘(...) decides on the relevant topics for the research missions on the basis of scientific assessment by the International Advisory Board’ (DAM Statutes, Section 10 Proposals for Alliance Activities, Para. 1, p. 8). Research missions

are selected for funding by the federal government and the northern German federal states.

8. The process culminates in the BMBF announcing funding within the framework of a funding guideline, thereby issuing a call for proposals to which collaborative partners can respond by applying for funding for a collaborative project.

The review and approval process for collaborative projects is carried out by Project Management Jülich (Forschungszentrum Jülich GmbH) in cooperation with the BMBF. The BMBF has commissioned Project Management Jülich to handle all DAM-related funding measures.

The guideline on the assessment, evaluation and decision-making procedure (p. 3) sets out the following criteria for the evaluation, assessment and decision-making of proposals for research missions:

- Relevance,
- Demand orientation,
- Scientific objectives of the research mission,
- Added value for the German science system.

These can be specified by further sub-criteria, which should be understood as a form of concretisation. The criteria are transparent and flexible, so adjustments can be made if the need arises during the process. The criteria are included in the appendix.

1.5. Financial resources of the DAM

The financial resources and activities of the DAM are regulated by the administrative agreement between the federal and state governments, as well as by the DAM statutes and contribution regulations (DAM statutes, Section 3 (4)).

1.5.1. Financing of the DAM office and activities

The administrative agreement (Section 3 Financing, Para. 1, p. 5) stipulates how the DAM offices and activities along the core areas of the DAM are to be financed:

> *'To carry out activities in the core areas of the DAM, the federal government and northern German federal states will initially provide project funds totalling up to €25 million annually, in an 80:20 ratio, through project funding. The northern German federal states will each contribute their share of the funding equally and will each allocate 20% of the total funding to the federal government on an annual basis.*'

The federal government therefore provides 80% of the funding and the northern German federal states 20%. The largest share of the funding is allocated to the implementation of the DAM research missions financed by the federal government (15 million[5] euros annually).

[5] Different figures apply for the years 2019 to 2021

In accordance with the administrative agreement, the financing of the DAM's activities from 2019 to 2022 was as follows:

Table2 Financing of the DAM from 2019 to 2022

	2019	2020	2021	2022
BMBF	EUR 2,500,000	EUR 7,500,000	EUR 20,000,000	EUR 15,000,000
Northern German federal states	EUR 625,000	EUR 1,875,000	EUR 5,000,000	EUR 3,750,000
Total	EUR 3,125,000	EUR 9,375,000	EUR 25,000,000	EUR 18,750,000

Source: Administrative agreement on the establishment and funding of a German Marine Research Alliance, Section 3 Funding, Para. 1. p. 5 (as of July 2019)

The overview (see Table 2) does not include the expenses incurred by the federal government for commissioning a project management agency to handle and manage the administrative aspects of the DAM research missions.

As an association, the DAM levies a contribution from its members in order to fulfil its statutory purposes, specifically to finance the office (Administrative Agreement, p. 6). The amount of the contribution is based on the number of employees of the respective DAM member who receive basic funding and is therefore staggered as follows in accordance with the Articles of Association (Contribution Regulations, Section 3 Contribution amount, Para. 1, p. 1):

- EUR 11,250 for university facilities,
- EUR 22,500 for research institutions with 150 or fewer basic-funded employees and
- EUR 45,000 for research institutions with more than 150 employees with basic funding.

For the 2023 financial year, the DAM annual report outlines income from membership fees totalling EUR 172,500. If an individual is a member of both DAM e.V. and KDM e.V., the KDM membership fee is fully offset against the DAM fee (Fee Regulations, Section 3, Paragraph 3, Sentence 1).

The following table provides an overview of all funds used to finance the DAM office, as well as transfer projects and research missions.

Table 3 Overview of funding for the DAM Secretariat, projects and DAM research missions (as at 31.12.2024) (in € thousand)

Funding for DAM office and research missions by the federal government and northern German states	2020	2021	2022	2023	2024	2025	2026	2027	2028	gesamt
DAM budget allocation (80% federal government)	7.500	20.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	132.500
DAM budget allocation (20% northern German federal states)	1.875	5.000	3.750	3.750	3.750	3.750	3.750	3.750	3.750	33.125
Total allocations	**9.375**	**25.000**	**18.750**	**18.750**	**18.750**	**18.750**	**18.750**	**18.750**	**18.750**	**165.625**
Funding for DAM office (GS) and transfer projects										
Funding for the office (here: states' share of GS funding)		1.288	755	916	1.227	1.268	1.500	1.500	1.500	9.954
Transfer project 'Interactive World Ocean' (third-party project funding)			80	271	239					590
Transfer project 'Digital Information Portal' (third-party project funding)			163	420	373					956
Total GS + transfer projects	**0**	**1.288**	**998**	**1.607**	**1.839**	**1.268**	**1.500**	**1.500**	**1.500**	**11.500**
Financing of DAM research missions			**17.752**	**17.143**	**16.911**	**17.482**	**17.250**	**17.250**	**17.250**	**121.038**
Funding commitment for pilot projects in the North Sea and Baltic Sea from 1 February 2020 to 28 February 2028	1.010	2.100	2.117	465	0	0	0	0	0	5.692
Funding commitment for 1st research mission (CDRMare) from 01.08.2021-31.07.2024	0	2.068	7.866	8.167	5.164	1.593	0	0	0	24.858
Funding commitment for 2nd research mission (sustainMare) from 01.12.2021-30.11.2024	0	246	5.330	6.858	5.410	899	0	0	0	18.743
Funding commitment for continuation of pilot missions from 1 March 2023 to 28 February 2026	0	0	0	879	1.238	1.328	509	0	0	3.954
Funding commitment for third research mission (MareXtreme) from 1 January 2024 to 31 December 2026	0	0	0	0	3.436	5.315	7.328	3.747	0	19.826
Total funds committed for missions	**1.010**	**4.414**	**15.313**	**16.369**	**15.248**	**9.135**	**7.837**	**3.747**	**0**	**73.073**

Source: Projektträger Jülich; For the 2023 financial year, the DAM annual report also shows income from membership fees of EUR 172,500.

1.5.2. Personnel resources of the DAM office

The office of the DAM Association assumes central responsibility for managing and coordinating the association's activities across its four core areas. It also acts as a central point of contact for members and external stakeholders from politics, administration, society and practice, addressing issues and concerns relating to German marine research.

According to the administrative agreement, the office was funded by grants from the northern German federal states totalling 500,000 euros in 2019 and 2020, and by federal funds totalling 1 million euros in 2019. From 2021 onwards, the office has been funded within the framework of co-financing (Administrative Agreement, § 3 Financing, para. 3, p. 6.). According to the DAM Annual Report 2023 (p. 53), in the 2023 financial year, the office and its work were primarily financed by grants from the northern German federal states. Income also came from membership fees collected from DAM members in accordance with the statutes.

An overview of the DAM office's business plan (p. 5) shows that three academic or scientific employees and six other employees, totalling 7.7 full-time equivalents (FTE), were planned for the DAM office in 2024.

The following table provides an overview of the DAM office employees at the time of the report, showing their respective areas of responsibility. Student assistants support the DAM office as planned.

The DAM Executive Board is closely networked with and supported by the head office. It manages the association and develops the strategic and conceptual direction of the DAM, which is approved by the General Assembly and the Board of Directors. The Executive Board thus provides strategic impetus for the office's work. According to the DAM's Articles of Association, Dr. Joachim Harms is the only one of the four Executive Board members who works full-time.

Table4 Overview of employees planned for the DAM office in 2024

Designation / area of responsibility	
Chairman of the Executive Board	**Management and core areas**
Managing Director, Head of Research	
Head of core areas data management and digitization, coordination of infrastructures	
Head of Core Area Transfer	
4 persons	
Communications Officer	**Communication**
Political Communication Officer	
2 persons	
Administration Officer	**Administration and support**
Office assistant	
2 persons	
Project coordination information portal	**Funding projects Transfer**
2 Speakers Core area transfer	
Information portal editorial team	
4 persons	
3 Student employees	Student collaboration
3 persons	

Source: DAM website (as of January 2025)

2. Evaluation report

2.1. Key findings

This report summarises the Evaluation Commission's key findings on the *German Marine Research Alliance*'s activities to date. The analysis is based on a comprehensive survey of primary and secondary data. This includes evaluating existing data and documents on the activities of the DAM; conducting an on-site visit with representatives from two member institutions; and carrying out interviews with stakeholders from politics, administration, civil society, and practice, as well as conducting online surveys of researchers and management staff from DAM member institutions.

Based on the collected data, the Evaluation Commission concludes that the DAM has established the fundamental conditions necessary to achieve its long-term objectives, as outlined in the administrative agreement (Section 1: Tasks and objectives of the DAM).

According to the Evaluation Commission's findings, the DAM has played a pivotal role in coordinating and developing German marine research since its establishment in 2019, establishing essential structures for this purpose. The DAM promotes cooperation between key stakeholders in marine research and acts as a competence center, information hub, and contact point for stakeholders within and outside the scientific community. The DAM Secretariat's activities, in cooperation with its network of member institutions and external partners, have primarily focused on stakeholder groups within Germany thus far. At the same time, these activities are increasingly contributing to the strengthening of the visibility and effectiveness of German marine research internationally. Planned activities suggest that the DAM will continue to strengthen its international presence, interlinking German marine research more closely with international research and transfer initiatives.

The Evaluation Commission has expressed particular positivity regarding the enhanced collaboration between non-university research institutions and universities within the northern German federal states, which has been facilitated by the establishment of the DAM. The alliance of member institutions under one brand creates added value that far exceeds what the members could achieve individually to strengthen Germany's position as a centre of scientific research and as a leader in global climate change research.

The Evaluation Commission notes that, as a central platform for German marine research, the DAM is unique in the German research landscape. This cooperation model is viewed by stakeholders outside marine research as having the potential to benefit other interdisciplinary and cross-institutional fields of research.

The Evaluation Commission supports further strengthening the activities of the DAM and the consistent continuation of its funding. Given the successes already achieved, and to provide greater planning certainty for the implementation of long-term goals, the Evaluation Commission recommends that the federal government and the northern German federal states examine the possibilities for the organisational and financial consolidation of the DAM.

2.2. Background and mandate of the evaluation

The evaluation of the DAM's effectiveness, efficiency, and achievement of objectives to date is based on the initial time limit of the administrative agreement until the end of 2025. An external evaluation of the DAM's activities in the aforementioned core areas is to be carried out in sufficient time before this date. Depending on the outcome of this evaluation, the federal government and the northern German federal states will decide whether to continue the DAM and, if so, what form this continuation or further development could take. The administrative agreement states that:

> *'Depending on the results of the evaluation, the Federal Government and the northern German federal states intend to work towards making the DAM permanent in organisational and financial terms, and to establish it in the German science system in the long term'* (Preamble, p.1).
>
> *'To review the effectiveness of the DAM, an external strategic and structural evaluation of DAM e.V.'s activities in the core areas to date will be carried out in the fourth year following the conclusion of the agreement. The federal government and the northern German federal states will agree on the objectives and content of the evaluation in advance. Based on the evaluation, the federal government and the northern German federal states will jointly decide on the continuation and further development of the DAM, and if necessary, its continuation.'* (§ 4 Evaluation, p. 6)

The Evaluation Commission began evaluating the DAM in Q1 2024. Kienbaum Consultants International GmbH supported the Evaluation Commission in its administrative role, providing methodological, conceptual, operational and administrative support.

2.3. Evaluation design and methodological approach

2.3.1. Evaluation frameworks

To evaluate the achievement of objectives and the effectiveness and efficiency of the DAM, frameworks were used that enable a well-founded and comprehensible assessment. These instruments include the IOOI impact logic (see Figure 2), a set of indicators based on this logic, and an analysis grid. These methodological approaches were adapted specifically for the evaluation of the DAM to ensure a holistic assessment of the funding initiative.

2.3.2. Methodology

The evaluation of the DAM is based on a systematic and methodologically sound approach that incorporates various survey methods. The aim was to assess the performance of the DAM from different angles and derive meaningful recommendations. The methods used and how they were applied in the evaluation process are briefly explained below.

Data collection follows a mixed methods approach, combining quantitative and qualitative methods. Quantitative methods were employed to present situations, structures, objectives, effects and economic efficiency based on data and facts. Qualitative methods, on the other hand, enabled an in-depth assessment of current conditions, identification of opportunities and risks, and formulation of future perspectives. The data were collected in two project phases.

Phase I: Data and document analysis

At the beginning of the evaluation, administrative documents, guidelines, publications and general statistics were analysed. This data was analysed quantitatively and qualitatively using statistical evaluation methods and systematic literature analysis.

Phase II: Collection, gathering and evaluation of quantitative and qualitative data

Four central data collection methods were used in the second project phase:

- **Online surveys:** Participants in research missions and management staff at member institutions were surveyed online. These were based on the defined indicators and pre-tested in advance. The aim of the survey was to collect information on target achievement, cooperation, and resource efficiency. The survey was carried out and evaluated using Qualtrics®.
- **Interviews:** Individual and group interviews with key stakeholders delved deeper into specific questions that could not be answered directly through documents or quantitative data. The interview guidelines were developed in close consultation with the Evaluation Commission.
- **On-site-visit**: An on-site-visit at the *Leibniz Institute for Baltic Sea Research Warnemünde* (IOW) (a member institution of the DAM) provided insights into the activities of the DAM from the perspective of its member institutions. Representatives from the Department of Maritime Systems at the University of Rostock also participated in the visit.

Once data collection was complete, the results were triangulated. This process involved combining the findings from different survey methods to strengthen the validity and reliability of the evaluation results.

This comprehensive report summarises the results of the evaluation and was prepared in close consultation with the commissioning parties and the Evaluation Commission.

2.4. Target achievement and impact analysis

2.4.1. Core area: research

The core area of research was defined to make scientific contributions to overcoming key challenges in marine research. The core area aims to address relevant social issues in the context of marine ecosystems. The research activities are based on the requirements of the DAM's administrative agreement, particularly the promotion of 'science-based (...) decisions on the protection and sustainable use of coasts, seas and oceans (...)' (Administrative Agreement, Section 1 Tasks and Objectives of the DAM, Para. 3a, p. 3). The division also serves to develop effective long-term research strategies and to improve national and international scientific cooperation.

The administrative agreement emphasises the importance of an interdisciplinary research process for the core area, ensuring the participation of a large number of actors and interest groups, thus increasing the relevance and viability of the solutions developed. Additionally, the administrative agreement stipulates that the International Advisory Board of the DAM regularly reviews the funded research missions (Administrative Agreement, § 1 Tasks and Objectives of the DAM, para. 3a, p. 3) to ensure scientific quality.

At the time of writing, the three core area research missions, CDRmare, sustainMare and mareXtreme, are being carried out; these DAM research missions provide a framework for collaborative research in which scientists from different disciplines and institutions work closely together.

In the context of the DAM research missions, workshops, science policy events and policy briefs are produced to act as a bridge between science, politics, business and civil society, providing information on research findings. The research activities within the framework of the research missions are characterised by a strongly inter- and transdisciplinary approach involving various stakeholder groups, including young scientists.

2.4.1.1. Evaluation of the core area of research

The process of finding and selecting topics for research missions

The application-oriented and socially relevant nature of the research missions is ensured throughout the process of selecting topics, with the involvement of stakeholders from the fields of science, practice, administration and civil society. The Evaluation Commission assesses the process of identifying and selecting research mission topics as efficient, transparent and science-driven.

The stakeholder groups involved convincingly emphasised that the activities involved in developing the research topics can be assessed as coherent and goal-oriented. According to the Evaluation Commission, the multi-stage process ensures funding for projects of high scientific and social relevance. Regarding the process design, it was noted that it is time-consuming; however, the comprehensive examination of topics (proposals) is considered essential to make viable recommendations. Additionally, this process facilitates the early exploration of potential collaborations between various institutions within the DAM network for the implementation of projects within the research missions.

The composition of the research missions

An analysis of funding recipients in DAM research missions shows that over 50 organisations are involved in sustainMare, CDRmare and mareXtreme missions. Between 22 and 28 partner organisations are funded per research mission.

The following table provides an overview of the organisations involved in the research missions and the funding received in each case. It is clear that DAM's member institutions are strongly represented in terms of numbers due to their relevant scientific focus.

Regarding the participation of university and non-university research institutions, a balanced relationship exists. Overall, it can be said that actors from the scientific community are involved in the research missions to a greater extent than other groups. Recently, the proportion of funded organisations not belonging to the Helmholtz or Leibniz Associations has increased. Industry participation has also increased in recent research missions.

These developments highlight the growing diversity of stakeholders involved in research missions, and demonstrate the success of the strategic objective of incorporating different areas of expertise and perspectives into projects.

Table5 Financially supported organizations (as part of at least one DAM research mission)

Financially supported organization (as part of at least one research mission)	Funding amount
GEOMAR - Helmholtz Center for Ocean Research Kiel	14.037.616 €
Alfred Wegener Institute Helmholtz Center for Polar and Marine Research	7.247.608 €
Christian-Albrechts-Universität zu Kiel	6.831.899 €
Leibniz Institute for Baltic Sea Research (IOW)	6.253.906 €
University of Bremen	4.221.978 €
Helmholtz Center hereon GmbH	3.986.023 €
University of Hamburg	3.329.684 €
Johann Heinrich von Thünen Institute Federal Research Institute for Rural Areas, Forestry and Fisheries - Institute of Sea Fisheries	3.003.691 €
Carl von Ossietzky University of Oldenburg	2.161.666 €
Senckenberg Society for Nature Research	1.944.474 €
University of Rostock	1.689.439 €
Carolo-Wilhelmina University of Technology in Braunschweig	1.473.882 €
Leibniz University Hanover	1.407.589 €
Rheinisch-Westfälische Technische Hochschule Aachen - Faculty of Georesources and Materials Engineering - Department of Neotectonics and Georisks	1.366.550 €
Leibniz Center for Tropical Marine Research (ZMT) GmbH	1.232.344 €
Federal Institute for Geosciences and Natural Resources (BGR)	1.153.804 €
north.io GmbH	811.248 €
Hanover University of Veterinary Medicine Foundation	726.094 €
Helmholtz Center Potsdam GFZ German Research Centre for Geosciences	687.485 €

University of Osnabrück	668.528 €
K.U.M. Umwelt- und Meerestechnik Kiel GmbH	605.235 €
Hamburg University of Technology	532.384 €
Sea & Sun Technology GmbH	524.976 €
Federal Maritime and Hydrographic Agency (BSH)	501.140 €
Max Planck Society for the Advancement of Science e.V.	459.361 €
University of Cologne	406.286 €
Kiel University of Applied Sciences	398.158 €
Fraunhofer Society for the Promotion of Applied Research registered association	396.021 €
Jade University of Applied Sciences Wilhelmshaven/Oldenburg/Elsfleth	388.606 €
Albert-Ludwigs-Universität Freiburg - Faculty of Applied Sciences - Institute of Microsystems Engineering (IMTEK) - Chair of	381.707 €
United Nations University (UNU-EHS)	329.321 €
State Agency for Coastal Protection, National Park and Marine Conservation Schleswig-Holstein	311.245 €
Fichtner GmbH & Co KG	310.385 €
University of Stuttgart - Faculty 2 Civil and Environmental Engineering - Institute of Spatial Planning and Development	300.984 €
Humboldt University of Berlin	294.872 €
Institute for the World Economy	290.834 €
University of Leipzig	284.317 €
Julius-Maximilians-Universität Würzburg - Institute of Geography and Geology - Chair of Remote Sensing (LSFE)	275.191 €
German Institute for International and Security Affairs (SWP)	268.275 €
GCF - Global Climate Forum e.V.	266.157 €
University of Greifswald	242.664 €
Federal Agency for Technical Relief (THW)	238.744 €
Lower Saxony State Agency for Water Management, Coastal Defence and Nature Conservation - Norden branch office - Division 3 -	232.302 €
Bund für Umwelt- und Naturschutz Deutschland, Landesverband Bremen e.V.	217.743 €
German Institute of Development and Sustainability (IDOS) - Deutsches Institut für Entwicklung und Nachhaltigkeit gemeinnützige Gesellschaft mit beschränkter Haftung	197.425 €
Federal Environment Agency	189.750 €
AquaEcology GmbH & Co KG	172.476 €
German Oceanographic Museum	149.330 €
Leibniz Institute of Ecological Urban and Regional Development	141.355 €
s.Pro - sustainable projects GmbH	139.748 €
Potsdam Institute for Climate Impact Research e. V.	131.647 €
Helmholtz Center for Environmental Research GmbH - UFZ	39.899 €

Source: Federal funding portal (as of December 2024), according to own evaluation

Inter- and transdisciplinary collaboration

Work in the field of DAM research missions and networks is highly interdisciplinary. In particular, the interdisciplinary processing of research questions is successfully pursued in the collaboration between different scientific disciplines, such as physics, chemistry and biology. Humanities scholars, engineers, and less frequently economists and legal scholars, are also represented in projects. Currently, there is greater demand for legal expertise than can be reflected in the projects. The Evaluation Commission therefore recommends responding to this need by creating opportunities for the selective commissioning of experts (e.g. those with legal expertise) with low thresholds and at short notice during the course of the project.

I Alongside the various specialist disciplines, the projects also include representatives from administration (e.g. state authorities), civil society (e.g. associations) and business (e.g. small and medium-sized enterprises (SMEs)), albeit to a lesser extent. Regarding the transdisciplinary composition of project teams, it was generally found that this ensures project issues can be dealt with comprehensively and effectively.

The Evaluation Commission notes that the stakeholder groups involved in the research projects consider the cooperation between stakeholders from science, administration, civil society and business to be successful. The disciplines and stakeholder groups represented complement each other well within the projects and create synergies. The composition of the project teams is considered diverse enough to make the research results accessible to a broad audience. It was found that cooperation between stakeholders in projects and missions is generally smooth. The findings from the evaluation suggest that the interdisciplinary and transdisciplinary approach to current topics and challenges in marine research is particularly strong in DAM research missions, even compared to other funding contexts.

The Evaluation Commission emphasises that the inter- and transdisciplinary composition of the project teams significantly increases the attractiveness of participating in research missions for scientists and non-scientists alike. Interdisciplinary exchange with representatives of various specialist disciplines and cooperation with actors outside the scientific system enables the generation of relevant specialist knowledge beyond one's own field of application.

The evaluation also showed that the activities of the DAM in the core area of research deepen the understanding of the involved parties for the diverse areas of application of marine research results. In this context, the research missions also facilitate technology transfer. As part of the project work and subsequent transfer activities, scientific and technological knowledge is transferred to society, culture, business and politics. Specifically, this ranges from consulting and networking between various groups of stakeholders (e.g. scientists and SME representatives) to cooperative research with industrial partners in research alliances. According to the Evaluation Commission, this lays the foundations for achieving the administrative agreement's goal of ‘developing research and development projects in close cooperation with industry’.

The Evaluation Commission positively assesses the fact that individual research networks have successfully implemented project management, with tandems of early career researchers and experienced leaders responsible for its delivery. This model plays a key role in the

professional development of junior researchers, equipping them with specialist expertise and management skills.

Monitoring the success and sustainability of research missions

During or at the end of the project period, the project management organisation carries out performance reviews of research missions to evaluate funding measures. To ensure scientific quality, the funded research missions are also reviewed at regular intervals by the DAM's International Advisory Board. Depending on the results achieved and the expected benefits, research missions can be extended beyond the initial three-year funding period for an additional funding phase. According to the Evaluation Commission, this procedure is effective in ensuring that successful research projects can continue smoothly. This creates a suitable framework within which DAM research missions can work on socially highly relevant issues that require a long-term approach.

On the subsequent use of results from research missions

To date, the results of DAM research missions have demonstrably enabled science-based decisions to be made on the protection and sustainable use of coasts, seas and oceans within the research networks. Numerous examples demonstrate that the results of these missions have been adopted by political and administrative bodies, as well as economic actors in some cases, leading to further activities.

Examples of the successful transfer of results from DAM research missions include:

- Research to prioritize munitions sinking areas for clearance was used to identify munitions piles for pilot clearance as part of the *Munitions at Sea Immediate Action Program*.
- Transfer activities with SMEs on coastal ecosystems for sustainable regional economic development resulted in collaboration between two companies producing a joint algae-based product
- The publication of the German government's *carbon management strategy* in 2024 is based on fundamental research into leakages and the environmental impact of carbon capture and storage (CCS).
- Results from sustainMare have contributed significantly to the Schleswig-Holstein state government's *Baltic Sea Protection Action Plan 2030*

The DAM Secretariat has also taken steps to ensure that research findings from the DAM research missions are put to further use via its own transfer formats, such as parliamentary evenings. This approach is rated positively by the Evaluation Commission, as it creates points of contact for a broad target group and underlines the social relevance of the research.

Embedding in the German research landscape

In terms of their genesis in the science system, interdisciplinary and transdisciplinary composition, mission and long-term orientation, and integration into the DAM network, the DAM research missions are unique in the German research landscape. According to the Evaluation Commission, the research missions contribute to making the structures of the German science system more dynamic, integrative and sustainable. The Commission is particularly positive about the strengthened cooperation between non-university research institutions and

universities in the northern German federal states. The alliance of member institutions under one brand creates added value that far exceeds what individual members could achieve alone in strengthening Germany as a location for science and in the field of global climate change research.

Embedding research missions in (inter)national agenda processes

The research missions primarily target stakeholders in the German research landscape. Nevertheless, the Evaluation Commission considers the international activities of the DAM Secretariat and its member institutions to be effective in terms of the administrative agreement to date. In the view of the Evaluation Commission, the research missions are suitably embedded in global projects for the protection and sustainable use of ecosystems. They support the United Nations' Sustainable Development Goals (SDGs) in the areas of 'Climate action' (SDG 13) and 'Life below water' (SDG 14), and substantially contribute to implementing the goals of the 'UN Decade of Ocean Science for Sustainable Development 2021 to 2030'. The relevance of the topics chosen and the successful implementation of the research missions is demonstrated by the award given to the MGF-Nordsee and MGF-Ostsee pilot missions. In 2024, they were selected as one of the ten most outstanding projects of the UN Decade of Ecosystem Restoration in a competition.[6]

By integrating DAM activities (including research missions) into international agenda processes, the DAM significantly strengthens the international visibility of German marine research. DAM research missions, such as CDRmare and sustainMare, are registered as activities of the UN Ocean Decade and the EU mission 'Restore our Oceans and Waters'. Preparations for the UN Ocean Decade Conference in Nice in 2025, including planned events on the research vessel METEOR, demonstrate the DAM's international strategic orientation and its strategic alignment of missions with global goals and initiatives. Furthermore, the DAM promotes knowledge transfer and networking between German marine researchers and international stakeholders by collaborating with organisations such as the International Council for the Exploration of the Sea (ICES) and the Baltic Marine Environment Protection Commission (HELCOM).

2.4.1.2. Recommendations for the core area of research

- **Continuation and further development of the process for identifying and selecting topics**

The Evaluation Committee recognises the existing process for identifying and selecting research mission topics as transparent, science-driven and effective. This multi-stage approach promotes the development of viable and relevant research topics and facilitates the early exploration of collaborations. The Evaluation Committee welcomes the DAM's systematic approach to involving a broad range of stakeholders in the process of identifying and selecting topics for research missions. This approach, which has already been successfully implemented in the past, ensures that the perspectives of various stakeholders from the worlds of

[6] This recognition is awarded by the *Federal Ministry* for *the Environment, Nature Conservation, Nuclear Safety and Consumer Protection* (BMUV) and the *Federal Agency for Nature Conservation* (BfN). It honors innovative and exemplary projects that are dedicated to the restoration, protection or maintenance of ecosystems.

science, practice, administration and civil society are incorporated into the development of research topics. It is sensible to continue and further develop this proven approach. The Evaluation Commission suggests regularly checking whether the composition of the Stakeholder Forum reflects all relevant perspectives. If this is not the case, the forum should be expanded to include additional stakeholders.

- **Strengthening interdisciplinary and transdisciplinary cooperation**

The interdisciplinary and transdisciplinary composition of the research missions significantly enhances the attractiveness and effectiveness of research. The Evaluation Commission recommends promoting this cooperation further and ensuring a balanced relationship between scientific disciplines and organisations from administration, civil society, and business. It is particularly important to establish a low-threshold mechanism through which projects can selectively integrate legal or other specific expertise as required (and at short notice).

- **Promoting diversity in the project consortia**

The DAM's research missions benefit from an increasing diversity of stakeholders involved in the projects. The Evaluation Commission recognises the potential of further promoting targeted access for actors outside large research organisations, particularly SMEs and non-governmental organisations (NGOs). This could strengthen the transdisciplinary perspective and ensure the connectivity of research results for a broader target group.

- **Promotion of young scientists**

The Evaluation Commission welcomes the previous involvement of early career researchers in the research missions. It is recommended that the tandem model of young scientists working alongside experienced leaders to manage joint projects continues, as this approach imparts technical expertise and project management and leadership skills. This supports career development and the long-term safeguarding of knowledge and skills in marine research.

2.4.2. Core area: transfer

A central task of the DAM is to generate knowledge from marine research and actively transfer it to politics, business, and society. In this core area, the DAM uses a variety of formats and approaches to make scientific findings accessible and strengthen public awareness of the importance of the oceans, promoting sustainable action. Transfer encompasses the two areas of technology transfer (i.e. the application of scientific findings) and knowledge transfer.

In the area of knowledge transfer, the focus is on educational and awareness-raising projects that encourage citizens to engage with current marine research issues. Examples of innovative formats that both impart knowledge and encourage participation include projects such as the 'Ocean Future Lab', the 'Interactive World Ocean' and the 'Oceans Online' platform. Partnerships with institutions such as the Futurium in Berlin, as well as cooperation with educational and networking organisations, emphasise this approach. Additionally, the DAM participates in public events and develops its own programmes focusing on the importance of marine ecosystems.

In the area of knowledge transfer, the DAM also promotes dialogue between scientists and stakeholders from the worlds of politics, administration, and business. These activities aim to make scientific knowledge accessible so that it can inform (political) debates and decisions.

In the core area of knowledge transfer, the DAM works closely with its member institutions to promote the next generation of scientists and engineers, as well as capacity development. The DAM is also developing a strategic concept in this context.

2.4.2.1. Evaluation of the core area of transfer

The Evaluation Commission examined the relevance and suitability of the DAM's transfer concepts and strategies, considering the corresponding activities within the research missions and at head office level.

On the strategic orientation of transfer activities

According to the Evaluation Commission's findings, the DAM has laid a solid foundation for its transfer activities by developing a strategic concept for knowledge transfer. According to this concept, knowledge transfer at the DAM encompasses four areas of action: 1. knowledge exchange with stakeholders, 2. dialogue with society, 3. promotion of young talent, and 4. capacity development.

Developed in close cooperation with the transfer officers of the DAM member organisations, this concept bundles cross-institutional added value and knowledge products, thereby strengthening the strategic orientation of the transfer. The DAM office pursues a strongly member-oriented and dialogue-based approach in its working methods, systematically promoting exchange with the member institutions and relevant stakeholders. The DAM's structured approach to developing transfer formats is particularly noteworthy. Transfer activities are organised along a clearly defined process chain, with stakeholders identified using stakeholder mapping. The current transfer strategy and the transfer formats implemented to date are not exhaustive. The DAM is continuously working to further develop its transfer activities within the scope of its personnel capacities, enabling it to respond flexibly to the changing needs of interest groups.

The DAM acts as a central point of contact and competence centre for various stakeholder groups. These include stakeholders from science, politics, administration, business, society, and civil society organisations, including non-governmental organisations (NGOs). The DAM offers these stakeholders advice, facilitates information exchange, and mediates targeted contact. The office also performs a central mediation function in this context by forwarding enquiries and concerns from political, institutional and social contexts to DAM experts and those responsible for research missions. This ensures that enquiries are processed efficiently and promotes the targeted dissemination of scientific findings, particularly in political decision-making processes. The Evaluation Committee notes that the DAM acts as a reliable partner and 'knowledge network' and is not perceived as a 'lobbying network'.

In the view of the Evaluation Commission, the DAM contributes in particular to increasing the visibility and effectiveness of the topics it represents in its function as a cross-institutional competence, advice and information centre.

Anchoring transfer activities in DAM working groups and committees

The Evaluation Commission acknowledges that the DAM has established a sustainable knowledge transfer network through its working groups (WGs), including the Knowledge Transfer WG and the Public Relations WG, as well as through targeted cooperation with external stakeholders. All DAM member organisations are actively represented in the knowledge transfer working group, which significantly strengthens internal networking and exchange. The knowledge transfer WG serves as a central platform for creating synergies between the participating institutions and for the strategic planning of transfer activities. Two meetings of the working groups took place in the reporting year, including one face-to-face meeting. In addition, informal discussion rounds were held to allow for more in-depth exploration of specific topics. The Evaluation Commission emphasises that the working group is rated by participants as an effective format that promotes the development of a joint transfer strategy, one that goes beyond the transfer activities of individual members. It strengthens networking among those involved, increases willingness to cooperate, and enables competencies to be bundled and expanded. The added value of this format, which brings together all the relevant stakeholders in German marine research in the field of knowledge transfer for the first time, is widely recognised.

The public relations working group has established itself as an effective format for exchange and networking at a working level. In this group, communication managers from DAM member institutions and KDM meet regularly to coordinate communication strategies and plan joint initiatives. This close coordination creates the basis for more effective public relations work.

The public relations working group met three times in total in 2023. During these meetings, key topics such as planning joint events and cooperating with the German Ocean Decade Committee (ODK) were discussed in depth. Particular focus was given to integrating the activities of the DAM and KDM into the UN Decade of Ocean Science for Sustainable Development (2021–2030), with the aim of increasing its reach.

In 2023, the DAM actively supported the ODK by providing personnel resources for administrative tasks and public relations work. According to the Evaluation Committee, the working group thus contributed to pooling expertise and promoting a coordinated approach.

At the time of writing this report, a business-related working group is in the implementation phase. The knowledge transfer working group's positive results and experiences to date, particularly with regard to networking, developing joint strategies and pooling expertise, suggest that the business-related working group will also be valuable.

The Evaluation Commission welcomes the planned establishment of the business-related working group, which could take the requirements and perspectives of economic stakeholders in German marine research into greater account. This could also increase the DAM's visibility and relevance in economic circles, and specifically promote knowledge transfer to companies and industry associations. Against this backdrop, the Evaluation Commission recommends that the establishment of the business-related working group be pursued vigorously and implemented in a timely manner. The Commission proposes close integration with the knowledge transfer working group to create synergies and maximise effectiveness.

The Evaluation Commission recognises the Stakeholder Forum as an independent advisory body of the DAM. It has around 30 representatives, mainly from politics, business, and civil society. It serves as a 'sounding board' for the DAM. The Forum makes a significant contribution to fulfilling transfer requirements by providing information on current and planned activities, and by gathering input from participants. The structured process for setting up the committee (stakeholder mapping) and the DAM office's professional meeting management should be emphasised positively. The Evaluation Commission also emphasises that the DAM has continuously expanded the circle of participants in the Stakeholder Forum in order to include the perspective of stakeholders from the private sector more comprehensively.

To the transfer formats of the DAM

The DAM has developed a wide range of transfer formats to incorporate scientific findings into political, economic and social decision-making processes. In addition to these, the DAM actively participates in existing/external event formats, adapting its contributions to different target groups to ensure its topics are communicated appropriately.

The DAM's transfer portfolio includes political formats such as parliamentary breakfasts, as well as scientific dialogue formats.

Furthermore, the DAM is committed to innovative approaches that engage target groups beyond politics and administration. To this end, it has developed educational and participatory formats, such as the 'Ocean Future Lab', the 'Interactive World Ocean' and the 'Oceans Online' information portal. Another important initiative is the 'Future Box Oceans', created in collaboration with Futurium.

The DAM's diverse transfer portfolio successfully reaches a broad target group with both classic and innovative formats, as evaluated.

According to the Evaluation Commission, transfer to political actors and the administrative level has been particularly successful. Examples of these efforts are:

- CDR activities (e.g. policy briefs and exchanges with politicians) have significantly contributed to discussions on the Carbon Dioxide Storage Act (KSpG). Until now, the use of CCS has been severely restricted, but as a result of DAM's research activities, a draft amendment to the Carbon Dioxide Storage Act has been created that would allow CCS for difficult-to-avoid or unavoidable emissions.
- CDRmare has also had an impact on the 'Natural Climate Protection Action Programme'. Initially, nature-based solutions for achieving climate protection goals in Germany focused solely on terrestrial methods, but marine methods are now also being considered. As a large-scale project, CDRmare increases the visibility of German research in the field of climate adaptation.
- As part of sustainMare activities, a position paper on munitions in the North and Baltic Seas was produced. This publication, along with targeted communication activities by the CONMAR (Concepts for Conventional Marine Munition Remediation in the German North and Baltic Seas) consortium of the sustainMare research mission, convinced political decision-makers to set up a remediation programme. This led to the German government launching an immediate programme for the recovery of munitions in the North Sea and

Baltic Sea, which began in August 2024. This development was also recognised internationally.

Exchanges with the authorities as part of the DAM research missions demonstrate that the results of DAM research are of interest at various political levels and are utilised further here. For example, the exchange with the German Energy Agency (dena) on low-emission technologies illustrates this.

According to the Evaluation Commission's assessment, the DAM's transfer activities appropriately promote the preparation of scientific findings for the target group and increase the visibility of research results among key stakeholders, thereby contributing to evidence-based political decisions.

The DAM is also involved in central political and administrative processes. It participates in the cross-party 'Parliamentary Marine Policy Group', initiated in 2024, and in stakeholder workshops on the National Marine Strategy. The DAM also cooperates closely with the Federal/State working group on the North Sea and Baltic Sea (BLANO), which coordinates the implementation of the EU Marine Strategy Framework Directive (MSFD) in Germany.

Through various initiatives, the DAM promotes collaboration between industry and science (e.g. fostering partnerships between different stakeholder groups in joint projects, such as the SeaRanger initiative). The Commission recognises the potential of these activities and favours further strengthening the interface with industry, for example by establishing a business-related working group. The Evaluation Commission also recognises the potential of addressing local authorities, institutions, and coastal management stakeholders (e.g. fishing associations and port authorities), as well as citizens, in a targeted manner in future, and involving them in transfer formats.

The Evaluation Commission emphasises that the DAM's transfer activities have significantly increased public awareness of marine topics. Participation in high-profile events such as the 'Long Night of Science', as well as the development of its own formats including 'Future Box Oceans', enables scientific findings to be communicated to a broad audience in an accessible and understandable way.

Additionally, the DAM plays a pivotal role as a cross-institutional information hub, pooling and presenting the expertise and offerings of its member institutions in a targeted manner. This includes key topics such as promoting young scientists in German marine research. This coordinated provision of information makes relevant content more accessible and creates added value for young scientists by providing them with orientation in a fragmented research landscape.

The Evaluation Commission expressly welcomes this function, viewing it as an important contribution to raising the profile of marine topics and promoting low-threshold access to information.

2.4.2.2. Recommendations for the core area of transfer

- **Strengthening coordination and networking in working groups**

The Evaluation Commission views the establishment of the knowledge transfer and public relations working groups as an important contribution to internal and external networking. It is sensible to continue and strengthen these committees. In particular, emphasis should be placed on establishing the planned WG Economy and linking it closely with the existing WGs in order to create synergies and involve economic players in a targeted manner.

- **Expansion of the interface to stakeholder groups outside the political arena**

The Evaluation Commission recognises the potential for further developing the transfer formats of the DAM to address local authorities, institutions, and coastal management stakeholders, such as fishing associations and port authorities. These stakeholders play a key role in implementing coastal and marine management measures, and could benefit more specifically from the scientific results of the DAM through greater involvement.

2.4.3. Core area: data management and digitization

In marine research, state-of-the-art technologies such as long-term observation devices, underwater robots, observatories and research vessels generate large amounts of data every year. This data includes information on water temperature, as well as data on the pollution and use of coasts and seas. Despite their great potential, access to this data is often difficult and insufficiently regulated, which limits its subsequent use.

The DAM therefore aims to establish a comprehensive, sustainable data management concept that ensures transparent, standardised access to research data. This concept is being developed in close cooperation with the DAM member institutions and is closely aligned with the National Research Data Infrastructure (NFDI). It is based on the FAIR principles (Findable, Accessible, Interoperable, Reusable), which aim to make research data findable, accessible, interoperable and reusable. The aim is to improve the availability and usability of decentralised data sets by integrating and consolidating existing repositories and strengthening links to national, European and international platforms.

Central activities of the DAM in the areas of data management and digitisation include the German Marine Research Portal (marine-data.de), the BMBF-funded 'Unterwegs' research data project, and participation in the NFDI. The 'Unterwegs' research data project is coordinated by the DAM and the data collected is compiled in the central marine-data.de portal, which was expanded further in the reporting year. This portal serves as a key platform to facilitate access to the collected data and maximise its value for science and society.

The cata management and digitisation working group, which comprises representatives from all DAM member institutions, plays a pivotal role in this core area. The group develops strategies and standards for efficiently pooling and exchanging research data, acting as a driving force for new data management concepts. In doing so, the group considers the requirements of non-university research institutions, universities, and the Helmholtz Association.

2.4.3.1. Evaluation of the core area of data management and digitization

The strategic foundations of data management in the DAM

The Evaluation Commission believes that the DAM has established itself as a leading provider of frameworks for data management and digitisation. Over the past five years, the groundwork has been laid to make research data available to the scientific community and wider society in the long term. These include the DAM Research Data Guidelines and the 'Data Management and Digitisation' concept, developed in close collaboration with member institutions.

These documents address the heterogeneous practices that currently exist in the handling of research data and promote the harmonisation of standards. They take into account existing national and international research data infrastructures and offer conceptual approaches to improving access to research data, making it more efficient and transparent. The Evaluation Commission recognises the DAM Research Data Guidelines as a milestone because they demonstrate the shared responsibility of the DAM Secretariat and the member institutions.

While the office acts as a coordinating body, providing impetus and supporting processes, it is up to the member institutions and researchers to implement and further develop the minimum standards at an institutional level. The Evaluation Commission emphasises that the DAM Secretariat has successfully fulfilled its role, thus initiating a cultural change in the scientific system that promotes access to, and compatibility of, research data.

Projects and platforms in the field of data management and digitalization

The DAM has already made a significant contribution to promoting sustainable research data management by implementing projects and developing platforms. The Evaluation Commission emphasises the importance of the BMBF-funded 'UnTERWEGS' research data project, which has coordinated the data management activities of the shipping member institutions of the DAM in a targeted manner since 2019. The project utilises research vessels as mobile measurement platforms, with permanently installed sensors collecting data en route to the research area. This data, which was not systematically checked or made available sustainably for a long time, is now checked for quality using standardised procedures and made available in accordance with the FAIR principles. A second project phase began in 2023, expanding activities to include medium-sized ships such as the ALKOR, ATAIR, ELISABETH MANN BORGESE and HEINCKE. This will further exploit the potential of German research vessels and increase the availability of quality-controlled data.

Another central element of the DAM's data management strategy is the German Marine Research Portal (marine-data.de). This web-based platform compiles a large number of datasets and data products from German marine research, enabling their visualisation, search and retrieval. In addition to general datasets, the portal offers topic-specific information prepared using so-called 'thematic viewers'. One example is the ‘munitions in the sea’ viewer, which was further developed during the reporting period to increase the accessibility and usability of the data.

In addition, the DAM collaborates closely with marine science institutions, such as GEOMAR and AWI, to integrate their existing data infrastructures into the DAM's data management system. Examples include the Ocean Science Information System (OSIS), which centrally provides expedition metadata, and AWI's REGISTRY, a digital platform for organising sensor-related metadata. According to the Evaluation Commission, these measures contribute to optimising data quality and availability, as well as creating a uniform database for scientific research, government bodies and the general public.

On the international connection and harmonization of research data

The international integration of research data is a key area of activity for the DAM. It ensures that data from DAM projects and research missions is systematically integrated into European and global data networks and platforms.

A key role is played by the publication of data in certified repositories such as PANGAEA (for observational data), the World Data Center for Climate (for model data), and Qualiservice (for social science data). These repositories are hosted by international platforms such as EMODnet, Copernicus or Global Ocean Surface Underway Data (GOSUD), which automatically retrieve and use the data for data products.

In this context, the DAM project 'Unterwegs' research data makes a decisive contribution. Using a ‘data broker’, PANGAEA expedition data is transferred into formats compatible with Copernicus, for example. Consequently, this data feeds into highly relevant products that are used by the Intergovernmental Panel on Climate Change (IPCC), among others. The project also ensures that data from permanently installed sensors, such as flow data from Acoustic Doppler Current Profiler (ADCP) measuring devices, is systematically transmitted to international platforms, such as the Global Telecommunication System (GTS) of the World Meteorological Organization (WMO) and the Joint Archive Shipboard ADCP (JASADCP).

Another forward-looking project is the planned interface connection between PANGAEA and the Global Biodiversity Information Facility (GBIF), which could enable data to be forwarded to the Ocean Biodiversity Information System (OBIS) in the long term. However, as OBIS requires specific data formats, establishing a direct connection would require additional human resources which are not yet available.

In addition to publication in PANGAEA, the DAM supports the use of community-specific international repositories. Where possible, these are linked to the German Marine Research Data Portal (marine-data.de) via interfaces to ensure that DAM data can be found centrally. This ensures that research data complies with the international FAIR principles and is effectively visible and usable.

The Evaluation Commission emphasises that these measures not only promote international networking, but also contribute to the harmonisation and standardisation of data.

Anchoring data management in DAM working groups and committees

The establishment of the data management and digitisation working group has appropriately anchored data management in the structure of the DAM. Consisting of experts from all member institutions, the WG plays a central role in developing and implementing concepts and standards for research data management. The Evaluation Commission emphasises that this model of cooperation promotes strategic considerations and bundles competencies, providing targeted support to DAM member institutions with limited resources in data management.

The Commission also welcomes the idea of setting up a helpdesk to support scientists in collecting, managing and publishing data. In future, this helpdesk could provide an information and support system covering the entire data lifecycle. Potentially set up under the umbrella of the DAM, the helpdesk could be made available to the entire German marine research community as a service unit and would join the NFDI4Earth network. The Evaluation Commission supports establishing the helpdesk and recommends strengthening the project in terms of personnel.

To promote skills and support smaller institutions

The DAM is actively committed to promoting data management skills and thus supports smaller member institutions in particular. The Evaluation Commission emphasises that these institutions benefit greatly from the DAM's initiatives, given that they often lack their own data management staff.

A key element in strengthening data management skills would be the establishment of the aforementioned data management helpdesk.

The NFDI4Earth Academy is an example of an established format for building expertise. Launched by the DAM in collaboration with Geo.X — The Research Network for Geosciences in Berlin and Potsdam — and the Geoverbund Aachen Bonn Köln/Jülich (ABC/J), it is a valuable resource for developing expertise in the field. This two-year training programme in data science is aimed at young scientists specialising in the Earth system and data sciences. It offers training in the form of workshops, seminars and summer schools. The first cohort of 39 fellows completed the programme in autumn 2023. Meanwhile, the second cohort of 34 fellows has already been selected. The NFDI4Earth Academy is based on the structures of the three participating research networks — the DAM, the Geo.X and the Geoverbund ABC/J — and highlights the importance of providing targeted support for young talent in the fields of data management and digitisation.

The Evaluation Commission acknowledges DAM's commitment in supporting its member institutions and promoting young researchers. It recommends continuing these measures and providing targeted resources to build expertise in research data management sustainably.

2.4.3.2. Recommendations for the core area of data management and digitization

With regard to the core area of data management and digitalisation, the Evaluation Commission makes the following recommendations:

- **Implementation of the FAIR principles**

The Commission considers it important that all data published from DAM research missions complies with FAIR standards. If this cannot be guaranteed, the Commission recommends that funding bodies introduce binding obligations to meet this requirement.

- **Promoting cultural change in the science system**

The Evaluation Commission considers the activities of the DAM to be an important contribution to cultural change towards open and cooperative science. To further strengthen this change, it is advisable to implement targeted measures, such as continuing the data management and digitisation working group, establishing the Helpdesk, and promoting networking among Fellows within the NFDI4Earth Academy framework.

- **Strengthening skills in the area of data management**

According to the Evaluation Commission, universities and member institutions without their own data management staff have particularly benefited from the activities to date. At the same time, there is still a need to strengthen skills in this area in a targeted manner. In this context, the DAM can further expand its pioneering role to provide sustainable and comprehensive support in this area. The Evaluation Commission suggests promoting the deployment, training and further education of 'data managers', for example by planning and financing them appropriately as part of the DAM research missions.

2.4.4. Core area: coordination of infrastructure

German marine research relies on a wide range of unique and costly research infrastructures, including research vessels, stations, underwater vehicles, observatories and aircraft. These infrastructures are essential for advanced scientific research and significantly contribute to our global understanding of the oceans. Optimising their use and ensuring they are operated efficiently is therefore of central importance in order to achieve the scientific goals of marine research and strengthen the competitiveness of German research, both nationally and internationally.

The DAM's core area, 'Coordination of infrastructures', focuses on developing and implementing comprehensive utilisation and operating concepts for large-scale equipment used at sea. The aim is to maximise the utilisation of these resources and optimise their benefits for all DAM member facilities. While the DAM coordinates the use of large-scale equipment, the operation of the infrastructure remains the responsibility of the respective facilities. Optimising the use of these infrastructures not only promotes research efficiency, but also strengthens interdisciplinary cooperation and knowledge exchange between participating institutions. Consequently, German marine research will be better positioned to address global challenges in marine science and further consolidate its status as a leading research nation.

2.4.4.1. Evaluation of the core area: coordination of infrastructure

On the strategic foundations of coordination of infrastructure

The DAM has created an essential foundation for the cooperative and efficient use of large-scale seagoing equipment by developing the 'Utilisation and Operating Concept'. Developed in close consultation with the DAM's member institutions, this concept promotes the harmonisation of processes and strengthens cooperation between the participating institutions. Smaller institutions in particular benefit from improved access to research infrastructure, demonstrating the DAM's role as an integrative framework provider in this core area.

The Evaluation Commission emphasises that the DAM significantly improves the coordination of research infrastructures by strategically developing and implementing such concepts. These activities positively impact the efficiency of use and cost transparency, and contribute to the quality and excellence of German marine research.

To promote the cooperative use of research infrastructures

The Evaluation Commission has noted that DAM membership and associated cross-institutional cooperation have encouraged a greater willingness to share infrastructure. It has been reported that DAM member institutions are increasingly making use of other members' infrastructure and providing their own resources at a lower threshold. The DAM itself has actively created a cooperation framework in the form of a 'Utilisation and operating concept for large seagoing equipment', which has strengthened the cooperative attitude and coordination of these infrastructures among the member institutions.

In the view of the Evaluation Commission, it is particularly the smaller institutions without their own large-scale equipment that benefit from DAM membership through easier access to infrastructure. This also has a positive impact on the core area of 'research'. Improved coordination of the use of large-scale equipment through the DAM, including within the framework of DAM research missions, positively affects the quality of research results.

On the recommendations of the German Council of Science and Humanities and their relevance

Of particular relevance to the work of the DAM is the Science Council's explicit reference to the 'Utilisation and operating concept for large seagoing equipment', which was developed by the DAM in 2022. The Science Council emphasised that reimbursement of costs for the use and operation of such large-scale equipment should be reorganised to ensure equal accessibility for researchers, regardless of their home institution. The aim is to increase the efficiency and transparency of these infrastructures' use.

The Evaluation Commission views the recommendations of the German Council of Science and Humanities as confirmation of, and strategic guidance for, the DAM's future activities in infrastructure coordination. The recommendations emphasise the importance of the foundations laid by the DAM and encourage an in-depth examination of the proposed measures to optimise infrastructure use and ensure access for all stakeholders.

2.4.4.2. Recommendations for the core area: coordination of infrastructure

Promotion of cross-institutional cooperation

Through its work, the DAM has established a cooperative approach to infrastructure use that has triggered a significant cultural shift towards more collaborative and efficient use of these resources. To further strengthen this change, the Evaluation Commission recommends that, in the future, strategic considerations on infrastructure coordination continue to be made with the close involvement of the network of member institutions.

Particular emphasis should also be placed on close coordination with the core area of 're-search' to ensure low-threshold, well-coordinated access to research infrastructures, espe-cially in the context of DAM research missions. This would be particularly beneficial for project partners who have little or no access to their own infrastructures.

In-depth examination of the recommendations of the German Council of Science and Humanities

The Evaluation Commission notes that further examination of the 'Recommendations for the Further Development of German Marine Research' by the German Council of Science and Humanities (with reference to the utilisation and operating concept for large-scale marine re-search facilities) could help achieve progress in the coordination of infrastructures.

2.4.5. Capacity development

The term 'capacity development' encompasses fields of action in all four core areas of the DAM. The DAM is therefore already planning or carrying out capacity development activities without explicitly using this term:

- Research missions: Generating socially relevant, solution-oriented knowledge, involv-ing stakeholders, international cooperation.
- Infrastructures: Coordination of utilisation and operating concepts for large-scale equipment, and opportunities for international exchange.
- Data management and digitization: Open and uniform access according to FAIR princi-ples, together with the NFDI.
- Transfer: Technology and knowledge transfer in the areas of knowledge exchange with stakeholders, knowledge communication, societal participation and education (continu-ing education, school education and the promotion of young scientists).

Additionally, the DAM has initiated efforts to bolster the existing capacity development activi-ties of other stakeholders and initiatives in marine research, such as the KDM, the UN Ocean Decade, and the Intergovernmental Oceanographic Commission (IOC), in its capacity as a cross-institutional platform. In future, the DAM intends to collaborate closely with these part-ners to provide its own impetus.

2.4.5.1. Evaluation of activities in the area of capacity development

DAM's groundwork in the area of capacity development

Through its activities to date in the area of capacity and skills development, the DAM has laid important foundations for networking, promoting, and supplementing capacity development measures within its core areas (see previous chapters on the Evaluation Commission's

findings) and more broadly. From the Evaluation Commission's perspective, the exchange initiated between the DAM and representatives of KDM, ODK and ZMT, in particular, forms a central basis for joint commitment in this field (see the Strategic Concept for Knowledge Transfer).

The DAM's commitment is evident in its promotion of a national screening of the activities of German marine research in the field of capacity development. To this end, the DAM supports the use of the international online portal 'Gateway to Ocean-related Capacity Development Opportunities around the World', developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO)/Intergovernmental Oceanographic Commission (IOC), which lists activities involving German marine research, sometimes in a leading role, organised by subject area. However, as of August 2023, this list was incomplete and possibly unknown to all DAM member institutions. To promote the use of the portal, the DAM presented it at the DAM General Assembly on 18 September 2023, calling on marine research institutions to report relevant activities there. A similar call was made to the specialist working groups, WG Public Relations and WG Knowledge Transfer. The aim of this initiative is to establish the UNESCO portal as a comprehensive overview of the activities of German marine research in capacity development, thereby increasing its international visibility.

Additionally, the DAM has identified potential strategies to promote and bolster capacity development in collaboration with emerging and developing countries. The KDM is involved in planning for the UN Decade of Ocean Science for Sustainable Development, particularly with regard to capacity development. The DAM could play a central role in this by representing Germany in research cooperation initiatives with developing and emerging countries in the marine sector.

One focus of this cooperation could be the exchange of infrastructure (e.g. research vessels and large-scale equipment) and technical support with identified target countries. It would also be important to promote knowledge exchange with political and administrative stakeholders in the target countries. These strategic considerations offer considerable potential for strengthening knowledge exchange and international cooperation in capacity development.

The Evaluation Commission recognises the relevance and potential of these approaches and recommends continuing and further developing the initiated activities in a targeted manner.

2.4.5.2. Recommendations for capacity development by the DAM

Strategic further development of capacity development

The Evaluation Commission believes that the activities of the DAM in the area of capacity development to date provide a solid basis for the further strategic development of this field. By developing a comprehensive strategic concept that integrates the national and international dimensions of capacity development, the DAM can strengthen its position as a central coordinating platform.

2.4.6. Relationship between DAM and KDM

The DAM and the KDM have almost identical members and pursue complementary goals. Nevertheless, the two organisations differ in terms of their origins and facilities.

The DAM and the KDM already work closely together in areas such as knowledge and technology transfer, and they share staff who promote close links between the two organisations. For instance, Prof. Ulrich Bathmann, Chairman of the KDM Executive Board, is also a co-founder of the DAM and sits on its Executive Board.

Given the clear content-related interfaces and the potential for synergies, discussions have been ongoing for several years about how the strengths of the two organisations can be combined more effectively to increase the impact of German marine research. Two strategy meetings involving DAM and KDM members in spring 2024 were a significant step towards a potential merger. The executive boards of both organisations were tasked with developing concrete merger proposals. These discussions were summarised in a strategy paper, which was coordinated with the members of DAM and KDM, the BMBF and the northern German federal states through an iterative process.

The Evaluation Commission emphasises that the DAM and the KDM both play central roles in German marine research, with some of these roles being complementary:

- The DAM is particularly impressive in its role as a coordinating body and framework provider within the field of German marine research. It has significantly advanced networking within the scientific community and with stakeholders outside the scientific system. The DAM also provides important strategic impetus for German marine research in the core areas of research, data management, digitisation, infrastructure coordination, and knowledge transfer.
- KDM is characterised above all by its strong international commitment. With an office in Brussels and its role as a think tank at a European level, it is excellently networked. KDM also has strong expertise in acquiring third-party funding and promoting international research collaborations.

Existing joint activities demonstrate how the strengths of both organisations can be combined to mutual benefit. One example is the public relations working group, which was originally set up within the context of the KDM and now functions as a joint body of the DAM and KDM. Within this framework, project-related working groups have been initiated to develop guidelines for policy advice and knowledge for action, for example.

The Evaluation Commission views a merger between the DAM and the KDM as a promising opportunity to create synergies, boost efficiency, and enhance the international visibility of German marine research. Combining the resources and expertise of both organisations could further enhance international competitiveness and bolster the global standing of German marine research.

Notably, the KDM's international network and proficiency in securing third-party funding could be bolstered by the DAM. Conversely, the DAM would benefit from the KDM's strong European presence, further promoting strategic cooperation and the utilisation of shared resources.

2.4.6.1. Recommendations on the relationship between DAM and KDM

As part of its evaluation, the Evaluation Commission considered the potential merger of the DAM and the KDM, gaining initial insights through interviews with relevant stakeholders. The Commission believes that a merger could create professional and organisational synergies, thereby strengthening the national and international visibility of German marine research.

It believes that clear and coherent governance structures and joint strategy development are critical to the success of merging the two organisations. This would enable both organisations to contribute their respective strengths equally and utilise them to their full potential. The strengths of the DAM are described in detail in this document. Regarding the KDM's activities, the Evaluation Commission particularly emphasises its involvement at the European level, its networking with European and international stakeholders in the context of marine research, and its experience in acquiring third-party funding.

2.4.7. Financial resources and economic efficiency

In the opinion of the Evaluation Commission, financial resources for all DAM activities are used in a targeted and efficient manner. The allocation of resources for DAM activities appears comprehensible and appropriate.

According to the Commission, the output of DAM activities in the various core areas, as well as its overarching function as a cross-institutional platform for coordinating and developing German marine research strategically, is extremely favourable in relation to the resources deployed. The same applies to the DAM's overarching strategic work.

The DAM's efficiency is characterised by a moderate administrative cost ratio, which is considered appropriate in relation to total expenditure.

The Evaluation Commission emphasises the need for sustainable, long-term financing of the DAM to ensure the successful implementation of strategic objectives beyond 2025.

2.4.8. Staffing of the DAM

The staffing of the DAM office is essential for the successful implementation of its strategic objectives in the four core areas. While the Evaluation Commission found that the personnel resources of the DAM office are generally adequate to fulfil its core tasks, additional potential for expanding activities was identified.

Composition of the DAM office and Executive Board

The DAM fulfils the statutory requirements regarding the composition of the Executive Board. According to the statutes, at least one representative of the universities and non-university institutions must be a member of the Executive Board.

As of January 2025, the DAM office comprises eight full-time employees, some of whom work part-time. In addition, four people are employed as part of funding projects, as are three student employees. According to the DAM office, this staffing level is sufficient to achieve the organisation's defined goals, although increasing staff numbers would provide additional scope for action.

Potential for expanding activities

The Evaluation Commission notes that the following additional potential could be realised if the DAM office had more staff:

Transfer area: While the DAM office is already successfully implementing numerous transfer formats, additional capacities could be used to intensify knowledge transfer. In particular, stakeholder groups such as economic actors and civil society organisations could be involved and addressed to an even greater extent.

Data management: The heterogeneous framework conditions of the member institutions make it clear that additional support is required, particularly in data management. With an appropriate increase in personnel, the DAM office could set up a central helpdesk, for example, to support the scientific community in implementing the data management strategy.

The Evaluation Commission considers the current staffing levels at the DAM office to be fundamentally adequate for fulfilling existing tasks. At the same time, there is potential to pursue additional strategic goals and further increase the effectiveness of the DAM by increasing staffing levels more specifically.

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Appendix

Directory Appendix

Table6 The DAM bodies and their functions in accordance with the DAM Statutes

General Assembly	**The General Assembly is a central body that defines these principles for the organization. Its responsibilities include electing the Executive and International Advisory Boards.** The General Assembly receives the annual report submitted by the Executive Board and the annual financial statements following their approval by the Board of Directors. At the Board of Directors' proposal, the General Assembly discharges the Board of Directors. The General Assembly decides on all other tasks assigned to it by law or the DAM Articles of Association. An ordinary General Assembly takes place at least once a year. The Executive Board determines the place and time of the meeting. The Chairperson of the Board of Directors issues the invitation and sends it to the members in writing or by email at least three weeks before the meeting. The invitation includes the agenda and associated documents. A General Assembly meeting may also be convened at the request of the Executive Board, the Board of Directors, or one-third of the members of DAM. The chairperson of the international advisory board and two members of the administrative council may attend the General Assembly as guests. The Executive Board must inform the Chairperson of the International Advisory Board and the Board of Directors members in a timely manner about a General Assembly meeting. The General Assembly is chaired by the chairperson of the administrative council and constitutes a quorum if at least half of the members are present. Each member has one vote and may be represented by another member or an executive employee with a written power of attorney. Resolutions are passed by a simple majority of votes, unless otherwise stipulated by law or the Articles of Association. Abstentions count as votes not cast. A secretary is elected for each General Assembly meeting to record the minutes. The chairperson of the meeting and the secretary must sign these minutes.
Executive Board	**The DAM's Executive Board is responsible for implementing the association's goals on behalf of the General Assembly and has the necessary authority to do so. The Executive Board manages the association and develops its strategic and conceptual direction, which must be approved by the General Assembly and the Board of Directors.** The Executive Board is supported by an appropriately equipped office to fulfill its tasks. The chairperson and deputy chairperson may each receive remuneration. The Executive Board consists of the full-time Chairperson, the Deputy Chairperson, and up to two other Executive Board members. The chairperson and deputy chairperson constitute the Executive Board as defined in Section 26 of the German Civil Code (BGB). The goal is to have at least one representative

	from universities and one from non-university institutions on the Executive Board. Members of the Executive Board are elected by the General Assembly for a four-year term and must be confirmed by the Administrative Council. Reelection is possible, and members of the Executive Board remain in office until a successor has been elected and confirmed. Dismissal by the General Assembly is also possible. The DAM is represented in and out of court by the Chairperson and Deputy Chairperson. The Executive Board prepares an annual report that is publicly accessible and provides information on the association's research results and activities. Members of the Executive Board are liable to the association only for intentional or grossly negligent behavior. The Administrative Council may issue rules of procedure for the Executive Board to regulate its working methods.
Administrative Council	**The Administrative Council is the supervisory and decision-making body of the DAM. It is comprised of representatives from the federal government (BMBF) and the northern German federal states.** The Administrative Council adopts the business plan proposed by the Executive Board and monitors its work. The Administrative Council has a comprehensive right to information from the Executive Board. Certain projects and transactions of the Executive Board require the prior approval of the Administrative Board, including: • Extraordinary legal transactions with a significant impact on DAM, • significant cooperation agreements with domestic and foreign institutions, • Investments above a defined cost limit, • Conclusion, amendment and termination of rental and lease agreements, insofar as these exceed specified limits, • Acquisition, sale and encumbrance of real estate, • Acquisition and formation of companies as well as changes to shareholdings, • Amendments to employment contracts for members of the Administrative Council authorized to represent the company, • significant changes to the activities or organization of the association. Significant changes to the activities or organization of the association. The Administrative Council decides on the implementation of projects in the core areas of the DAM. These decisions are based on recommendations from the General Assembly and statements from the International Advisory Board. The Administrative Council consists of six members appointed by the federal states of Bremen, Hamburg, Mecklenburg-Western Pomerania, Lower Saxony,

	and Schleswig-Holstein, as well as the BMBF. Each northern German federal state has one vote, and the federal government has the same number of votes as the states combined. Additionally, members of the Executive Board, the Chairperson of the International Advisory Board, and representatives of various scientific organizations (e.g., the Helmholtz Association and the German Research Foundation) attend the meetings as guests. Further guests can be invited as needed. The Administrative Council passes its resolutions at meetings, which take place at least once a year, or by circulation. The Board of Directors is chaired by the Federal Government representative. The Administrative Council makes decisions by simple majority. In the event of a tie, the Chairman of the Administrative Council has the casting vote. Decisions with a financial impact cannot be made without the consent of the Federal Government or the federal states. The Administrative Council may form committees whose members do not have to be Board members. However, these committees cannot be given decision-making powers.
International Advisory Board	**The DAM International Advisory Board serves as the organization's technical advisory body. Its main task is to assess and evaluate project and activity proposals in the areas of DAM research, development, and infrastructure.** The Advisory Board uses a science-based process and considers the non-scientific perspectives of users and stakeholders when making these assessments. Based on these evaluations, the Board makes recommendations to the General Assembly and the Administrative Council. The International Advisory Board is also consulted on issues relating to the DAM's further development and future design. Consisting of up to nine members, the International Advisory Board is elected by the General Assembly for a four-year term and confirmed by the B Administrative Council. Reelection is permitted once. Members of the Advisory Board must be independent of the Association and its members and may not benefit, either directly or indirectly. Particular emphasis is placed on the international orientation of the board, so numerous members should come from the international scientific community. Additionally, at least one member must be from the marine or maritime industry, and another must be from the marine or maritime public sector. To take into account specific expertise for the DAM, the General Assembly can also nominate persons from non-scientific fields. Elections are personal, and elected members do not represent institutions. To fill vacant seats, the Executive Board compiles lists of nominees, generally containing three names for each seat. These lists are based on proposals from DAM members.

The International Advisory Board elects a chairperson from among its members. The chairperson convenes and chairs the meetings. The Advisory Board meets at least once a year and may invite guests as needed. Recommendations are usually made during meetings, though an exception is possible in certain cases.

To support its tasks, the Advisory Board may establish panels with a specific specialist focus and time-limited mandates. The composition of these panels ensures a high level of specialist expertise and is decided by the International Advisory Board. Each panel is chaired by a member of the International Advisory Board.

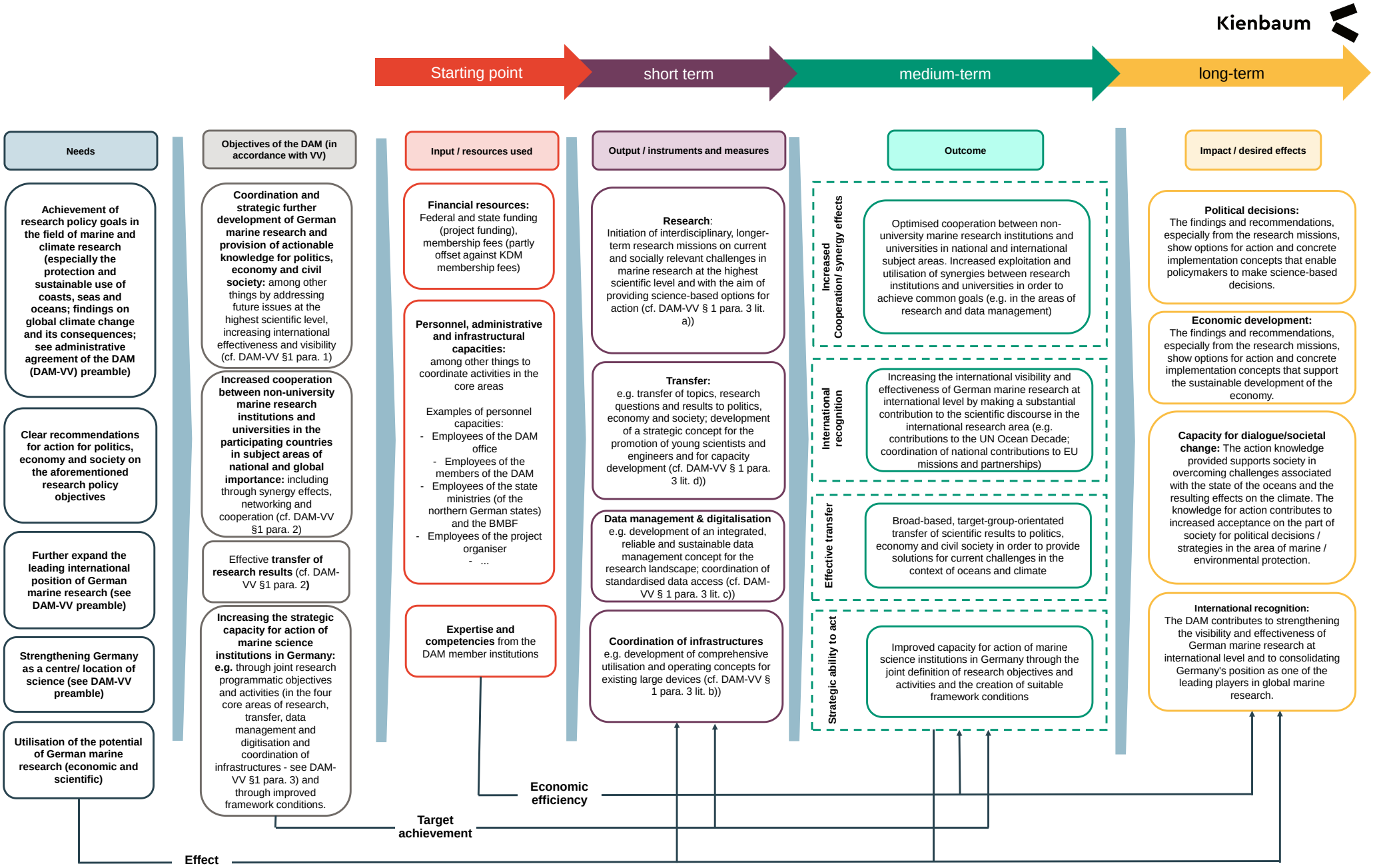
Table7 Criteria for the evaluation of research mission proposals

Relevance
Is the topic of the outlined research mission relevant and topical and in what respect? Are current and relevant societal challenges of marine research addressed? Is there a wider societal benefit?
Does the outlined research mission serve to enable science-based decisions on the protection and sustainable use of coasts, seas and oceans?
Does the outlined research mission contribute to the implementation of the MARE:N research program?
Demand orientation
Does the outlined research mission contribute to the active transfer of knowledge to a policy field other than research policy? To which (environment, economy, transport, food, energy, etc.)?
Does the outlined research mission make a significant contribution to the active transfer of knowledge to society (the general public)? Are there citizen science approaches?
Does the outlined research mission make a significant contribution to the active transfer of knowledge to the economy? (Utilization possibilities/utilization potential)
Are suitable stakeholders involved?
Does the outlined research mission contribute to the promotion of young scientists and engineers and to capacity development?
Scientific potential
Is the outlined research mission interdisciplinary and/or transdisciplinary?
Is the scientific approach outlined competitive and is it compatible with current programs (national and international)? Is an exchange/cooperation with international initiatives planned?
Does the outlined research mission contribute, for example, to the development of an integrated data management concept, the development of standards for the coordination of open, uniform access according to FAIR principles?
Added value for the German science system
Can the outlined research mission result in added value for (German) marine research in terms of content and organization?
Does the outlined research mission contribute to the networking of universities and non-university research institutions?

Does the outlined research mission serve to increase the international visibility of German marine research and does it make an active contribution to international programs, e.g. implementation plans UN Decade and UN Development Goals (SDGs)?

Source: Guideline on the assessment, evaluation and decision-making process, p. 4 (as of November 2021)

Figure2 Impact logic DAM


Kienbaum
Starting point
short term
medium-term
long-term
Needs
Achievement of research policy goals in the field of marine and climate research (especially the protection and sustainable use of coasts, seas and oceans; findings on global climate change and its consequences; see administrative agreement of the DAM (DAM-VV) preamble)
Clear recommendations for action for politics, economy and society on the aforementioned research policy objectives
Further expand the leading international position of German marine research (see DAM-VV preamble)
Strengthening Germany as a centre/ location of science (see DAM-VV preamble)
Utilisation of the potential of German marine research (economic and scientific)
Objectives of the DAM (in accordance with VV)
Coordination and strategic further development of German marine research and provision of actionable knowledge for politics, economy and civil society: among other things by addressing future issues at the highest scientific level, increasing international effectiveness and visibility (cf. DAM-VV §1 para. 1)
Increased cooperation between non-university marine research institutions and universities in the participating countries in subject areas of national and global importance: including through synergy effects, networking and cooperation (cf. DAM-VV §1 para. 2)
Effective transfer of research results (cf. DAM-VV §1 para. 2)
Increasing the strategic capacity for action of marine science institutions in Germany: e.g. through joint research programmatic objectives and activities (in the four core areas of research, transfer, data management and digitisation and coordination of infrastructures - see DAM-VV §1 para. 3) and through improved framework conditions.
Input / resources used
Financial resources: Federal and state funding (project funding), membership fees (partly offset against KDM membership fees)
Personnel, administrative and infrastructural capacities: among other things to coordinate activities in the core areas
Examples of personnel capacities:
- Employees of the DAM office
- Employees of the members of the DAM
- Employees of the state ministries (of the northern German states) and the BMBF
- Employees of the project organiser
- ...
Expertise and competencies from the DAM member institutions
Output / instruments and measures
Research: Initiation of interdisciplinary, longer-term research missions on current and socially relevant challenges in marine research at the highest scientific level and with the aim of providing science-based options for action (cf. DAM-VV § 1 para. 3 lit. a))
Transfer: e.g. transfer of topics, research questions and results to politics, economy and society; development of a strategic concept for the promotion of young scientists and engineers and for capacity development (cf. DAM-VV § 1 para. 3 lit. d))
Data management & digitalisation e.g. development of an integrated, reliable and sustainable data management concept for the research landscape; coordination of standardised data access (cf. DAM-VV § 1 para. 3 lit. c))
Coordination of infrastructures e.g. development of comprehensive utilisation and operating concepts for existing large devices (cf. DAM-VV § 1 para. 3 lit. b))
Outcome
Increased Cooperation/ synergy effects
Optimised cooperation between non-university marine research institutions and universities in national and international subject areas. Increased exploitation and utilisation of synergies between research institutions and universities in order to achieve common goals (e.g. in the areas of research and data management)
International recognition
Increasing the international visibility and effectiveness of German marine research at international level by making a substantial contribution to the scientific discourse in the international research area (e.g. contributions to the UN Ocean Decade; coordination of national contributions to EU missions and partnerships)
Effective transfer
Broad-based, target-group-orientated transfer of scientific results to politics, economy and civil society in order to provide solutions for current challenges in the context of oceans and climate
Strategic ability to act
Improved capacity for action of marine science institutions in Germany through the joint definition of research objectives and activities and the creation of suitable framework conditions
Impact / desired effects
Political decisions: The findings and recommendations, especially from the research missions, show options for action and concrete implementation concepts that enable policymakers to make science-based decisions.
Economic development: The findings and recommendations, especially from the research missions, show options for action and concrete implementation concepts that support the sustainable development of the economy.
Capacity for dialogue/societal change: The action knowledge provided supports society in overcoming challenges associated with the state of the oceans and the resulting effects on the climate. The knowledge for action contributes to increased acceptance on the part of society for political decisions / strategies in the area of marine / environmental protection.
International recognition: The DAM contributes to strengthening the visibility and effectiveness of German marine research at international level and to consolidating Germany's position as one of the leading players in global marine research.
Economic efficiency
Target achievement
Effect