OCEAN DATA RELATED PROGRESS AND ACTIVITIES IN THE OCEAN DECADE
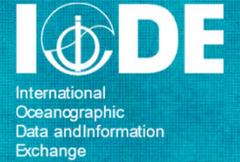
1. THE DECADE COORDINATION OFFICE FOR OCEAN DATA SHARING
2. VISION 2030 WHITE PAPER ON CHALLENGE 8 — DIGITAL OCEAN
3. DATA AND INFORMATION MANAGEMENT AND SHARING IN THE DECADE

2024 06 13 OCEAN STUDIES BOARD MEETING 102

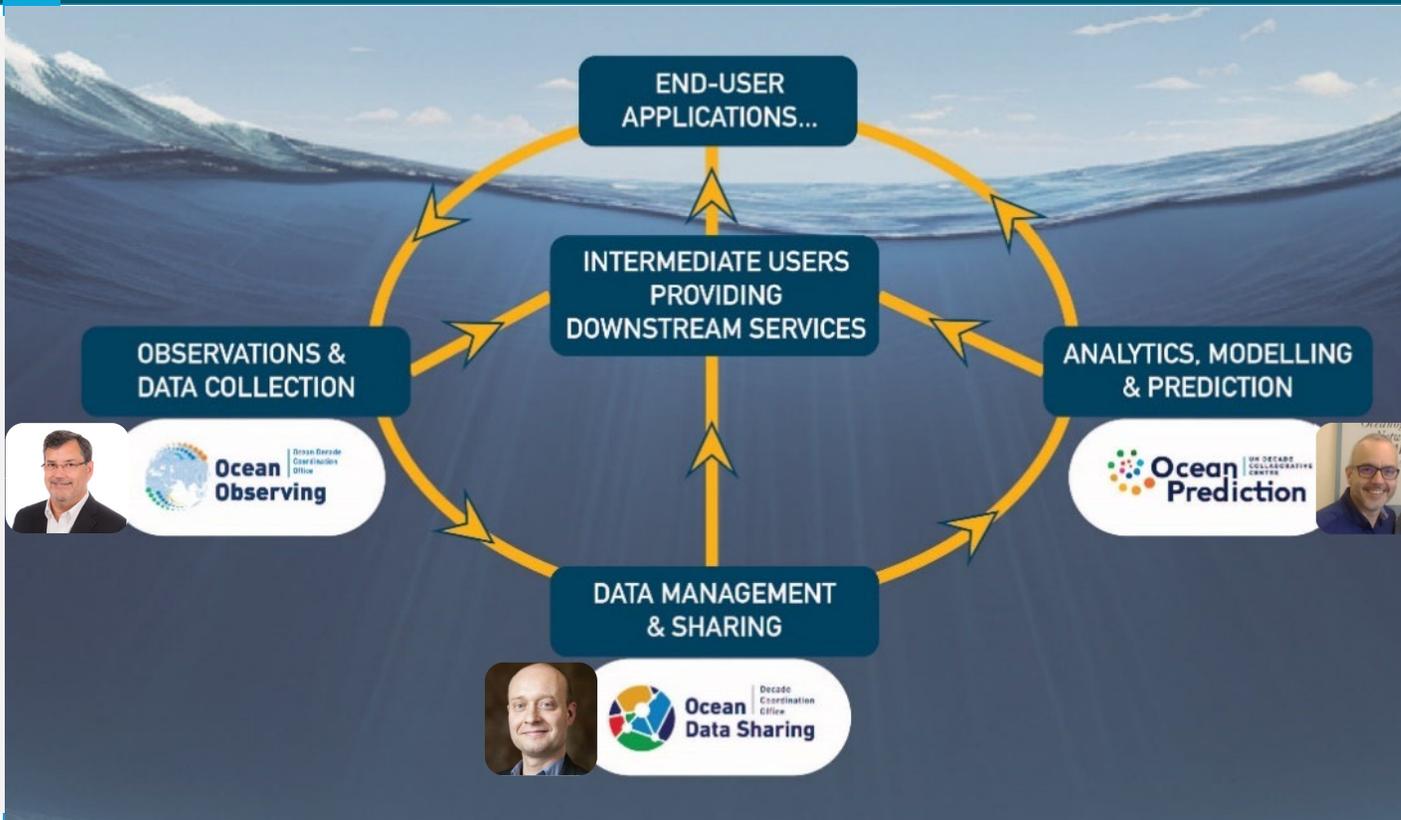*JAN-BART CALEWAERT, LEAD MANAGER DCO-OCEAN DATA SHARING*

1. DECADE COORDINATION OFFICE FOR OCEAN DATA SHARING

Key Components of a globally distributed, trusted, inclusive, and interconnected ocean data and information ecosystem

- The main aim of the Decade Coordination Office (DCO) for Ocean Data Sharing is to **establish, promote and coordinate** the data management and sharing component of the digital ecosystem needed for the Ocean Decade to be successful.

DCO for Ocean Data Sharing

Building understanding and capacity to transform ocean data sharing in the Decade

- **Coordinate & interconnect the data-sharing component of the digital ecosystem** for the Ocean Decade → Help **implement the Decade's Data and Information Strategy**

- **Assist Decade collaborators with data sharing guidance** to achieve the highest possible data quality and adherence to **FAIR and CARE** principles.

- Facilitate and support efforts to **address Challenge 8 – Creating a digital representation of the Ocean**

- **Promote data literacy and capacity equitably**

- Help identify and address **data gaps and infrastructure needs**
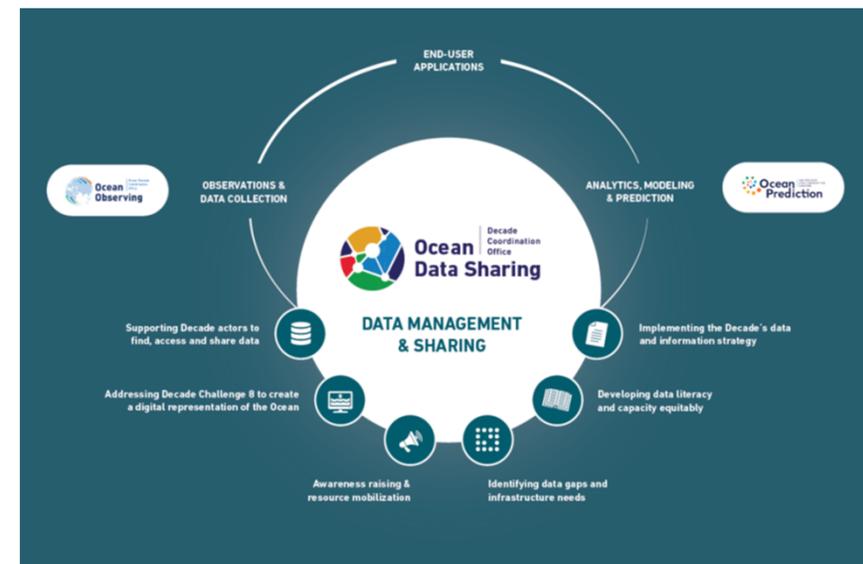
DCO-ODS Website now available

https://oceandatasharing-dco.org/

Includes information on the essential components that serve as the foundation for shaping and advancing the Decade's Digital Ecosystem, to help drive the Community of Practice on Data Sharing and underpin the support to Decade Actions;

Featuring online resources developed by the DCO-ODS:

- *Data Resource toolkit*
- *Online Data Help Desk*

Overview

What is a DCO?

Decade Coordination Offices (DCOs) provide targeted support to the Ocean Decade through a coordination and catalysis role for Decade Actions the regional or thematic level, in this case on the e of ocean data sharing.

le, as the DCO for Ocean Data Sharing, is to ort Decade Actions with capacity development, eness raising, tracking of progress and ource mobilisation, as well as catalysing new partnerships and initiatives as part of the Decade.

Currently, the DCO for Ocean Observing is led by Terry McConnell and hosted by GOOS, the DCC for Ocean Prediction by Enrique Alvarez Fanjul and hosted by Mercator Ocean international, and the DCO-Ocean Data Sharing is currently led by Jan-Bart Calewaert and hosted by IODE.
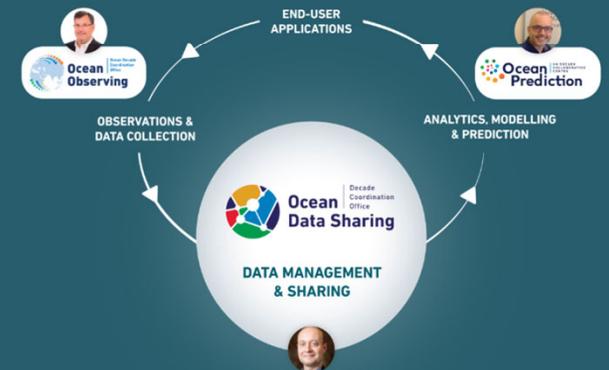
DCO-ODS Associated Decade Actions

- Connected to **4 Primary Attached** Programmes and Contributions

  - **Ocean Data 2030** (Programme, Lead: IODE)

   Support data and information sharing needs of Decade Actors by
    → Nurturing a distributed global data and information ecosystem that links existing ocean information systems around the world, and enables more efficient discovery of data, information and knowledge products.

    - **Digital innovation Hand-in-Hand with fisheries and ecosystems scientific monitoring** (Programme, Lead: FAO)

    - **World Ocean Database Programme (WODP)** (Contribution, Lead: NOAA)

    - **GEOTRACES** (Lead: U.S. National Science Foundation on behalf of international GEOTRACES partners)

- Connected to **1 National Decade Committee (Belgium)** and **3 Decade Implementing Partners** (**EurOcean, EMODnet, Chinese National Marine Data and Information Service NMDIS**)

- In total, **106 endorsed actions** address Challenge 8 — Creating a digital representation of the Ocean, including: **18 programmes, 64 projects** and **24 contributions**.
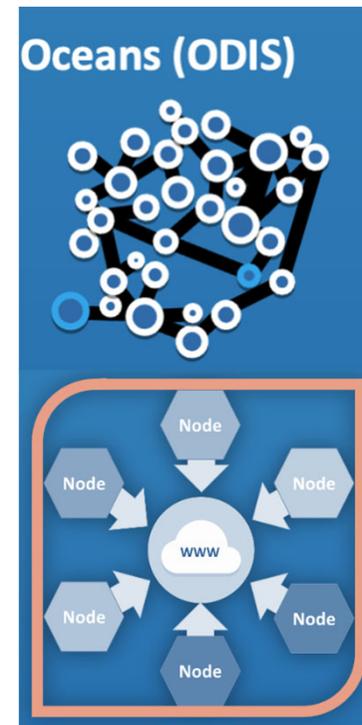
From OceanInfohub to **Ocean Data 2030** - Four initiatives that work very closely together:

- **ODIS** is the Ocean Data and Information System (ODIS)

- **ODIS-Cat** catalogued systems pre-ODIS, now part of ODIS

- **OIH** project: brought user communities together, developed ODIS architecture and a global demonstration, OIH portal now integrated into ODIS

- **Ocean Data 2030** is a Programme, to expand ODIS, support the Ocean Decade and connect more widely to Ocean Data systems.

The ODIS catalogue of sources

The Ocean Data and Information System

Ocean Data 2030
A registered Programme of the UN Decade for Ocean Science for Sustainable Development

OIH
Ocean InfoHub

The Ocean InfoHub Project

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

2. VISION 2030 — WHITE PAPER 8 CREATING A DIGITAL REPRESENTATION OF THE OCEAN

Vision 2030 - Decade Strategic Ambition Setting

https://oceandecade.org/vision-2030/

- Strong demand from Decade community to **shape a common vision** for the next 8 years & enhance collective impact
- Unique window of opportunity to **deliberately design the 'science we need'** and avoid dispersion of Decade Actions
- Growing need to **measure & document impact** of the Ocean Decade

- ❖ What does success look like for this Ocean Decade Challenge at the end of the Decade?
- ❖ What milestones / targets do we need to achieve throughout the Decade to be on the path for success for this Challenge?

Indicators to measure progress

Priority datasets to unlock & generate

Technology & innovation solutions

Capacity development & exchange needs

Strategic Ambition

Infrastructure for data & knowledge generation

Partnership & resources

Knowledge to generate & share

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

UN Ocean Decade Vision 2030 Working Group 8

Challenge 8: Create a digital representation of the Ocean
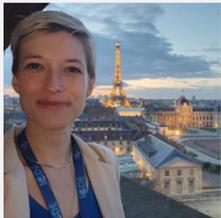
THE CO-CHAIRS

Jan-Bart **Calewaert**

Paula Cristina **Sierra-Correa**

*Through multi-stakeholder collaboration, develop a **comprehensive digital representation of the ocean**, including a **dynamic ocean map**, which provides free and open access to explore, discover and visualize data and information on the past, current, and future state of the ocean.*

THE EXPERT MEMBERS

Ann-Christine **Zinkann**

Dick M.A. **Schaap**

Gerben J. **de Boer**

Toru **Suzuki**

Gustav **Kågesten**

Iain **Shepherd**

Tanya **Haddad**

Véronique **Jégat**

Kate **Crosman**

Marc **Taconet**

Martin **Visbeck**

Mike **Smit**

Ren **Xingyuan**

Peter Teye **Busumprah**

Steve **Hall**

Alain **Arnaud**

Who are the users of the digital representation of the Ocean?

- The **primary users** of Challenge 8 outputs are the **scientists, engineers and experts** working to address **all the other Decade Challenges.**

- Diversity of potential applications of the enabling digital ecosystem makes **anticipating every potential use challenging.** → **Data needs & priorities identified by other Challenges** are proxy for primary users.

- The Decade also has the ambition to **'leave no one behind'.** Outputs that are relevant and useful for the **widest possible range of users and stakeholders** must also be delivered.

- What all Challenge 8 users have in common is the need for
    (i) Digital content: wealth of existing & accumulating ocean data, info & digital products;
    (ii) Infrastructures, tools & services: to enable them to access, share & use these

Delivering the Strategic Ambition – Challenge 8

The **Strategic Ambition for Ocean Decade Challenge 8** is to have in place by 2030:

- **The enabling environment [Infrastructures, Tools, Services and Content],** for the creation of and access to an increasing number of digital representations and applications of the Ocean
- **All observations, datasets, data products, information and knowledge outputs** generated by Decade Actions **should be shared and easily available to all**.
- **A global Digital Atlas** with at **minimum 10 societally relevant global base-layers & minimum 10 local use cases** (prioritizing SIDS and LDCs).
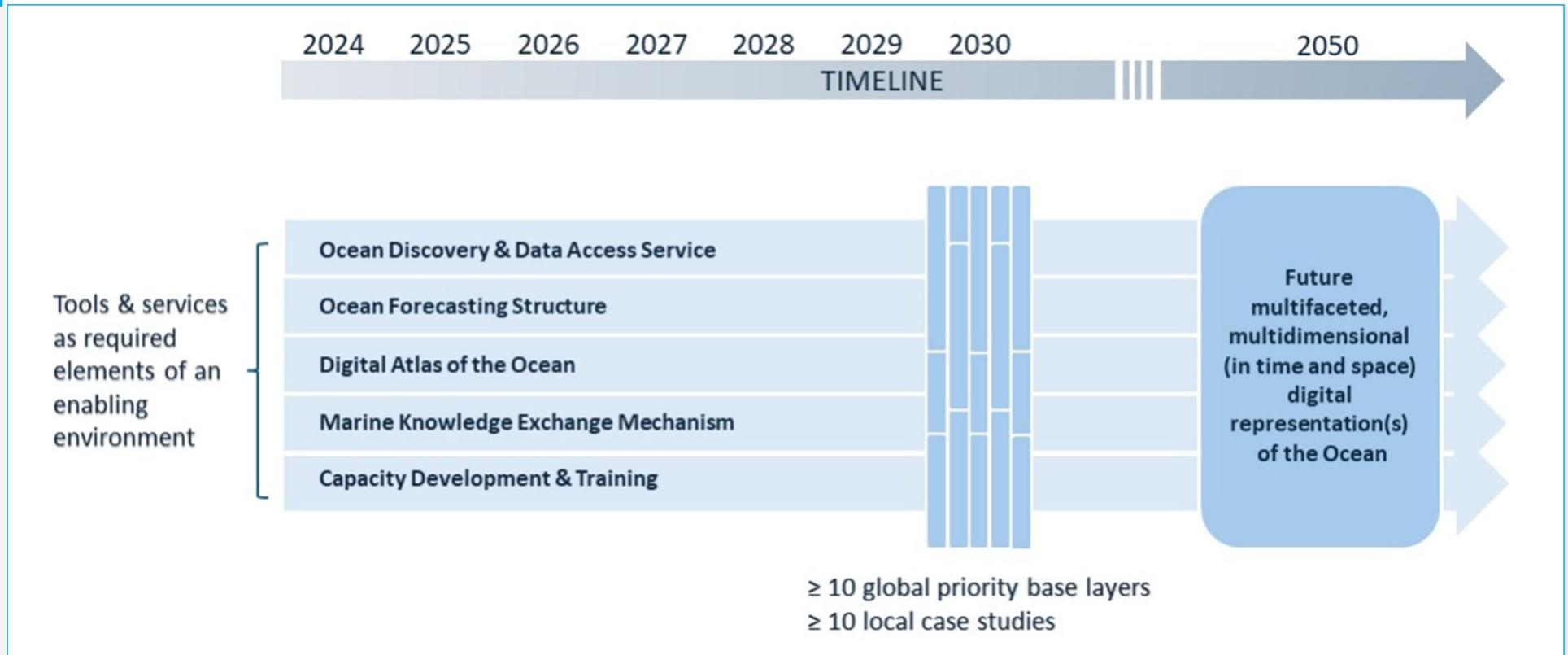
The following **tools, systems and services** to be developed and in place by 2030:

1. A federated global **Ocean Data Discovery & Access Service** (DDAS) with map viewer + Ocean Data **Helpdesk** and distributed **Data Ingestion Service**;
2. A global **Technical and Organizational Structure for Ocean Forecasting**;
3. A user-friendly reference global **Digital Atlas of the Ocean**;
4. Set of **platforms & mechanisms to easily store & exchange ocean information&knowledge**;
5. **Enhanced Capacity Development & Training** resources/facilities tailored to user-needs;

The Ocean Decade

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Vision 2030 White Paper

Challenge 8
Create a digital representation of the ocean

Version 1.0 - April 2024

unesco
Intergovernmental Oceanographic Commission

Tools, services and Infrastructures

≥ 10 global priority base layers
≥ 10 local case studies

Ensure **interoperability** and **compatibility** of proposed data and information-sharing systems & services with other core ocean knowledge systems and/or decision support tools/applications existing or currently under development – **connecting and building on what exists already.**
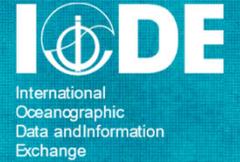
3. OCEAN DATA SHARING SURVEY - RESULTS

DATA-RELIANT MAPPING
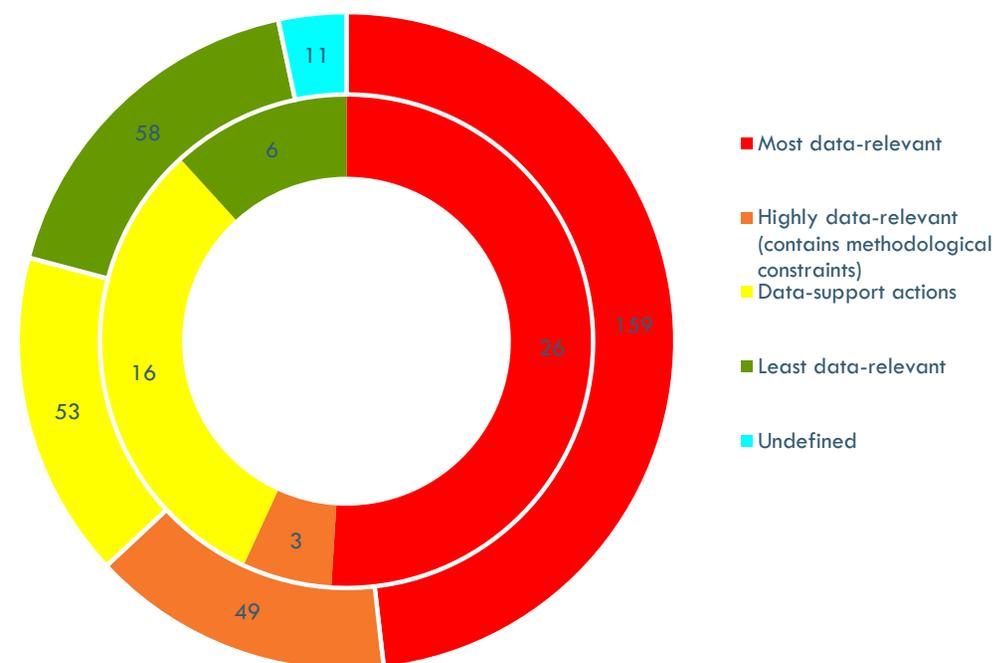# OF ENDORSED DECADE ACTIONS

- A detailed review was conducted to assess the relevance and importance of the data collection/management/sharing/use activities of **381 endorsed Actions** (updated to March 2024)

- Examined the descriptions provided for each of the **51 endorsed programmes** **and** **330 endorsed projects**

- Actions were categorised into five groups, based on the relevance of, and reliance on, data handling activities for their success:

'**Most data-relevant**' **-** a strong element of data collection/ sharing/ usage in these Actions, particularly related to ocean observation, monitoring, predictions, integrated data platforms/portals, ocean data management, and the building of 'Digital Twin(s) of the Ocean' applications.

'**Highly data-relevant but containing methodological constraints**' **-** also intensely linked to data, but the data collection/generation processes might not comprehensively depict the actual state of the Ocean, which could potentially impact the usability of the outcomes. However, the outcomes of these Actions will contribute to fundamental knowledge for the development of emerging observing techniques and tools, as well as prediction models.

'**Data-support Actions**' **-** a lesser emphasis on data but would require data support to achieve their objectives, or to inform decision-making processes.

'**Least data-relevant**' **-** a minimal reliance on data-driven approaches, tended to focus on advocacy, awareness-raising, or ocean literacy and training activities

'**Undefined**' **-** insufficient information provided in their descriptions to ascertain their data relevance

MAPPING RESULTS

Total number of programmes and projects being identified into each of the 5 data-relevant categories, out of 51 programmes (inner ring) and 330 projects (outer ring)

The results were summarised into the table, visualised in a pie chart:

	Programme	Project	Total
Most data-relevant	26	159	185
Highly data-relevant (contains methodological constraints)	3	49	52
Data-support actions	16	53	69
Least data-relevant	6	58	64
Undefined	-	11	11
	51	330	381

- Most data-relevant
- Highly data-relevant (contains methodological constraints)
- Data-support actions
- Least data-relevant
- Undefined

SURVEY OF ACTIONS

The DCO-ODS launched a survey from March to April 2024 to gather insights from stakeholders involved in Ocean Decade Actions.

- Objectives
    - to **better understand the challenges** faced by the endorsed Decade Actions in the realm of Ocean Data Sharing
    - to **identify where and how the DCO for Ocean Data Sharing can provide support** to enhance data sharing practices and collaboration within the global Ocean science community.
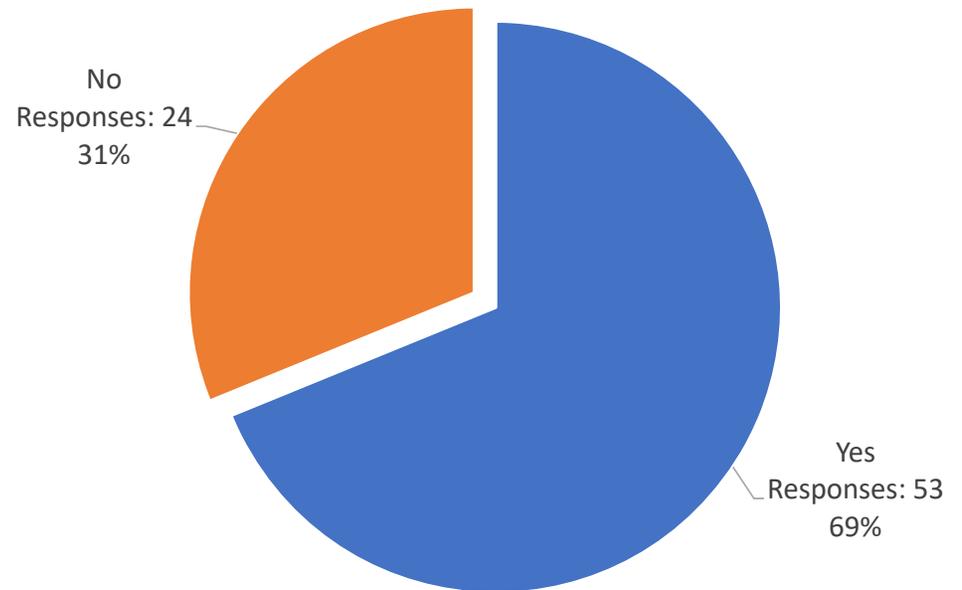
The survey received **92 responses, representing 91 contributions, programmes, and projects.** These responses covered a geographical distribution of 32 countries.

FAIR DATA SHARING

Awareness of the obligation to make data Findable, Accessible, Interoperable, and Reusable (FAIR)
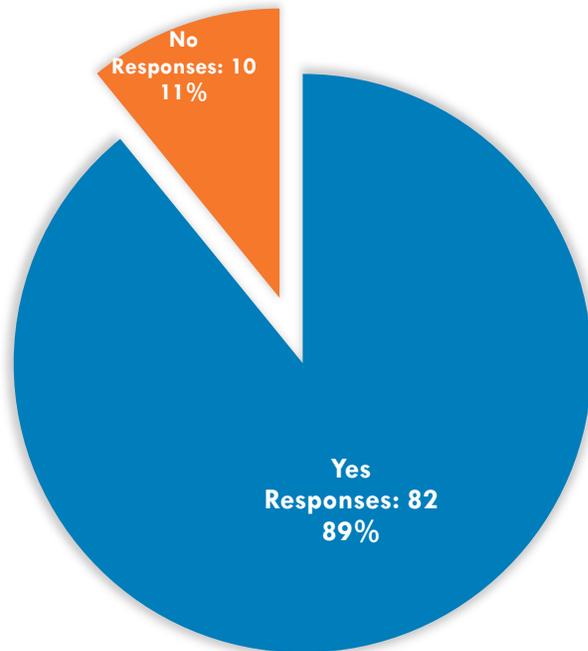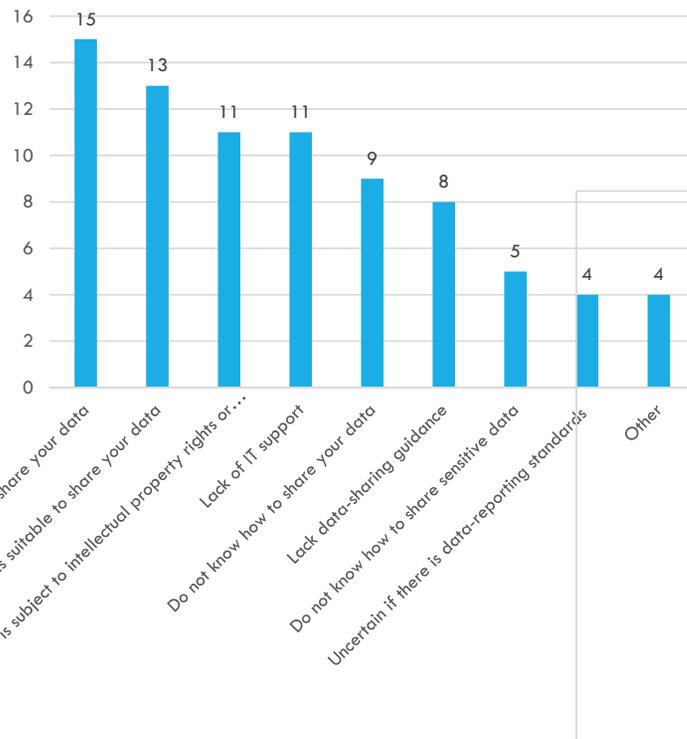
**Actions reporting if the data collected are shared on FAIR data-sharing service/ platform/ repository**

No Responses: 10 11%

Yes Responses: 82 89%

No Responses: 24 31%

Yes Responses: 53 69%

Yes   No

EXPERIENCE OF DATA GENERATION AND SHARING

Ocean Data Sharing | Decade Coordination Office

IODE International Oceanographic Data and Information Exchange

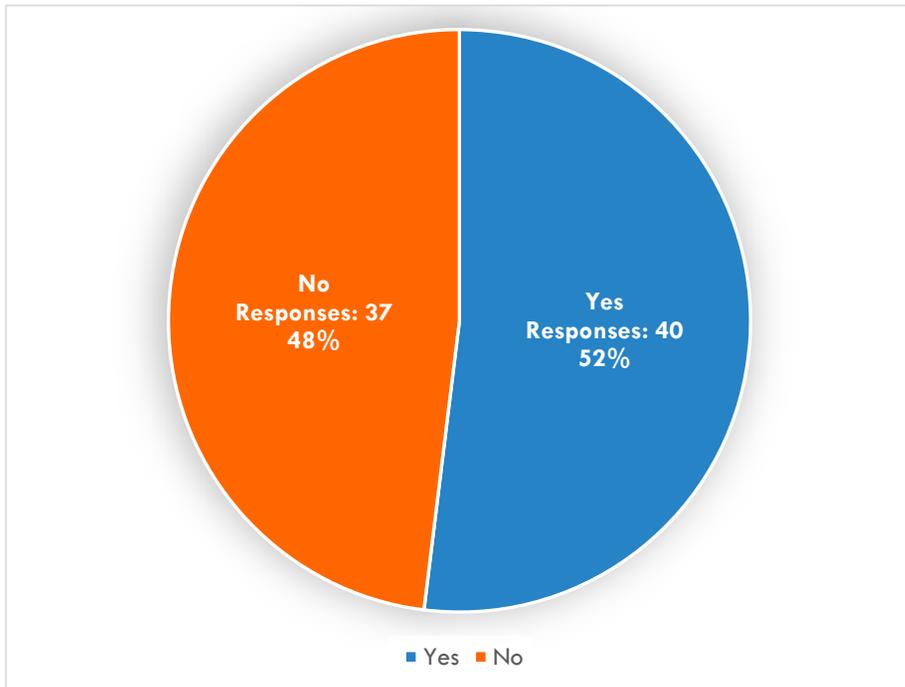## Reasons for actions not sharing the data collected

Do actions know what standard(s) to follow when sharing data?
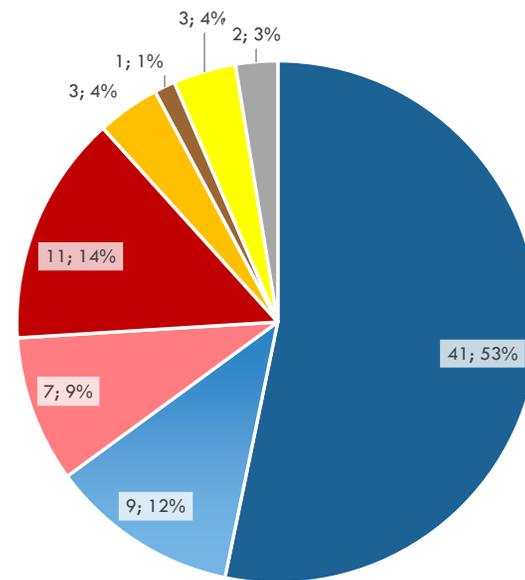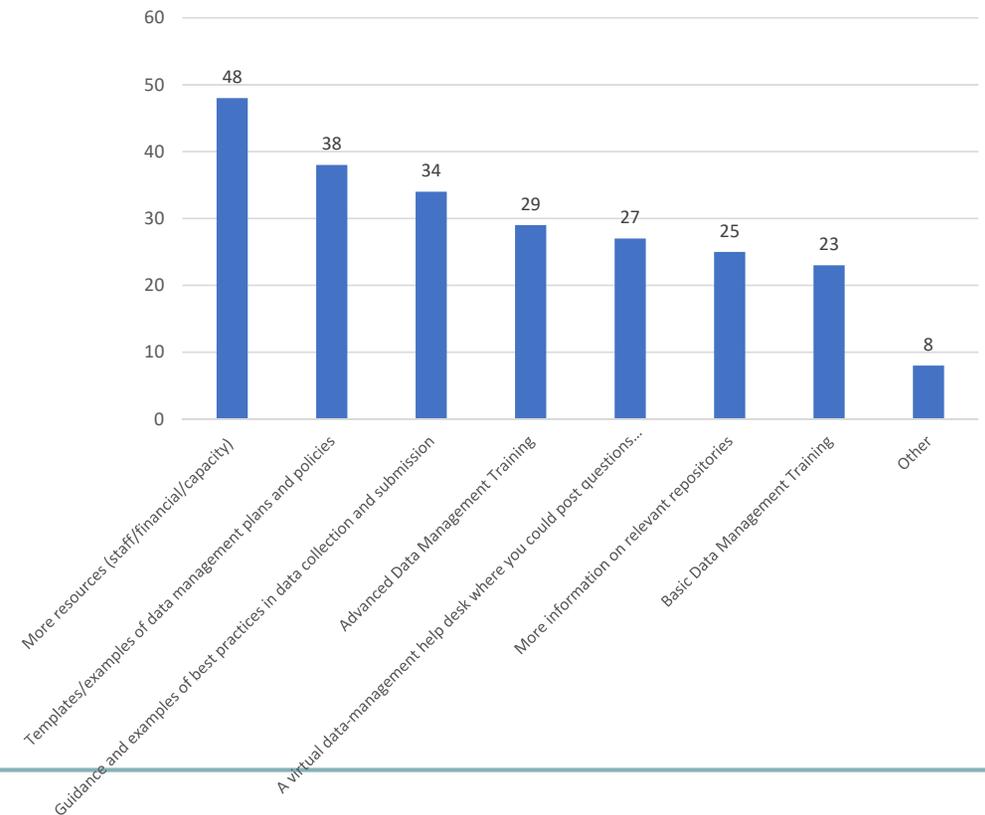

Pie chart legend:
- Yes, we have data experts in the team who are familiar with data standards to ensure FAIR sharing
- Yes, we are not familiar with reporting standards, but we follow a reporting template to meet the standard of the repository where we submit the data
- No, the data are published in a scientific journal which does not standardise reporting format
- No, we have not shared our data yet
- Uncertain if there is a standard for non-traditional data
- Uncertain if our reporting follows any standard

EXPERIENCE OF DATA GENERATION AND SHARING

## Do Actions have a data management plan and/or a data policy?

Pie chart:
- No Responses: 37 — 48%
- Yes Responses: 40 — 52%

Legend: ■ Yes ■ No

Most helpful to support Actions' data-sharing ambitions/requirements

Bar chart values:
- More resources (staff/financial/capacity): 48
- Templates/examples of data management plans and policies: 38
- Guidance and examples of best practices in data collection and submission: 34
- Advanced Data Management Training: 29
- A virtual data-management help desk where you could post questions...: 27
- More information on relevant repositories: 25
- Basic Data Management Training: 23
- Other: 8

Ocean Data Sharing — Decade Coordination Office

IODE — International Oceanographic Data and Information Exchange
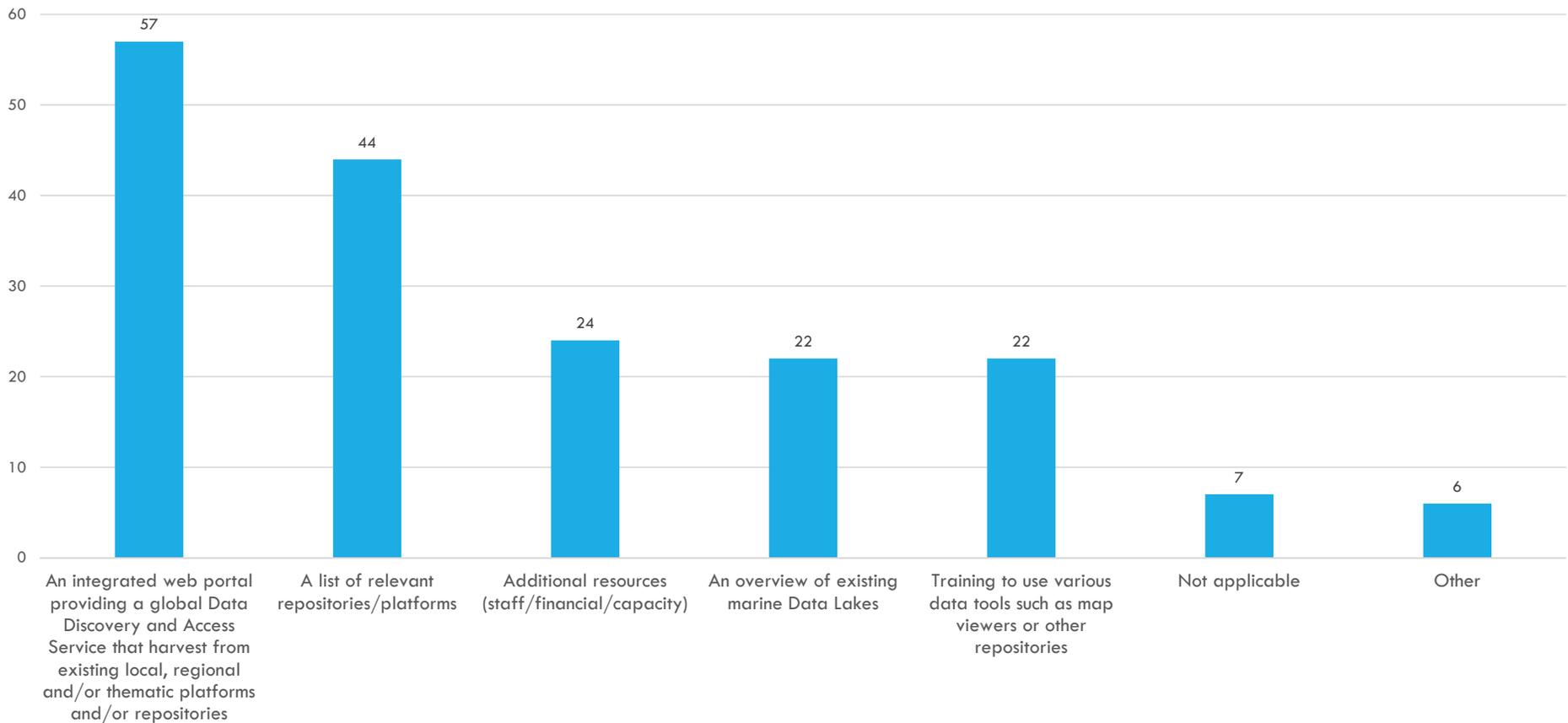
HOW YOU USE YOUR DATA?

Actions face difficulty finding and/or using the data and/or data products they need

Difficulties actions have in finding and using data and data products
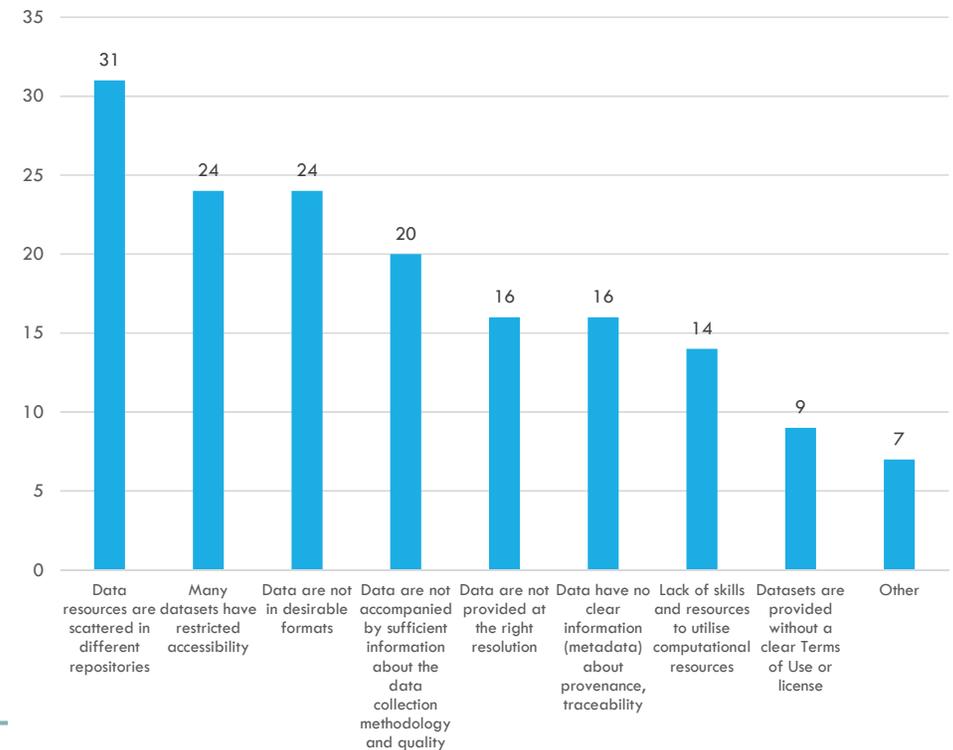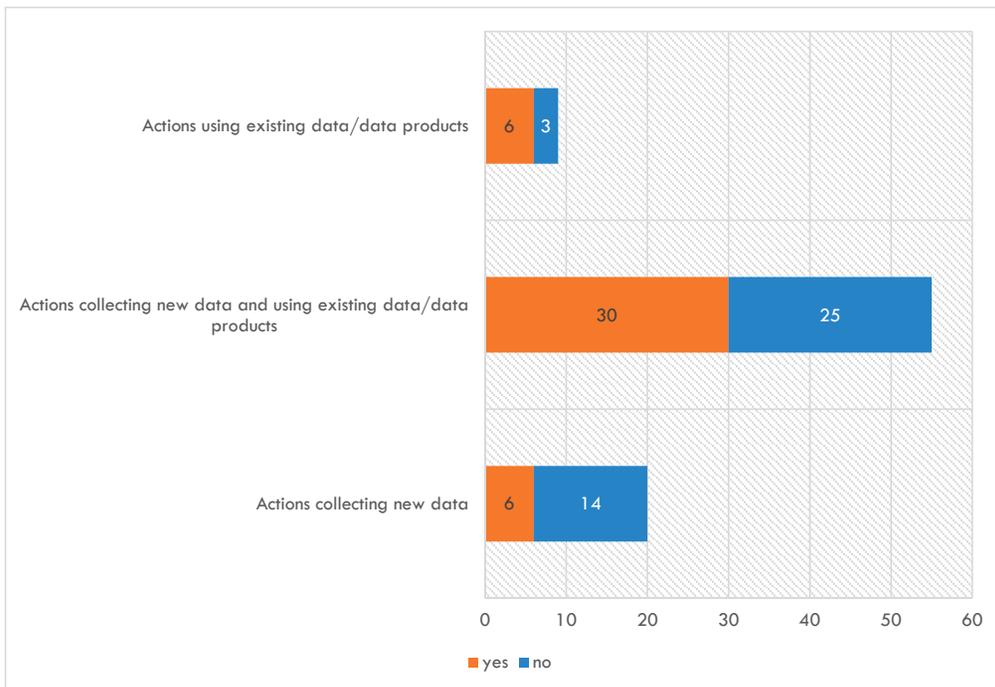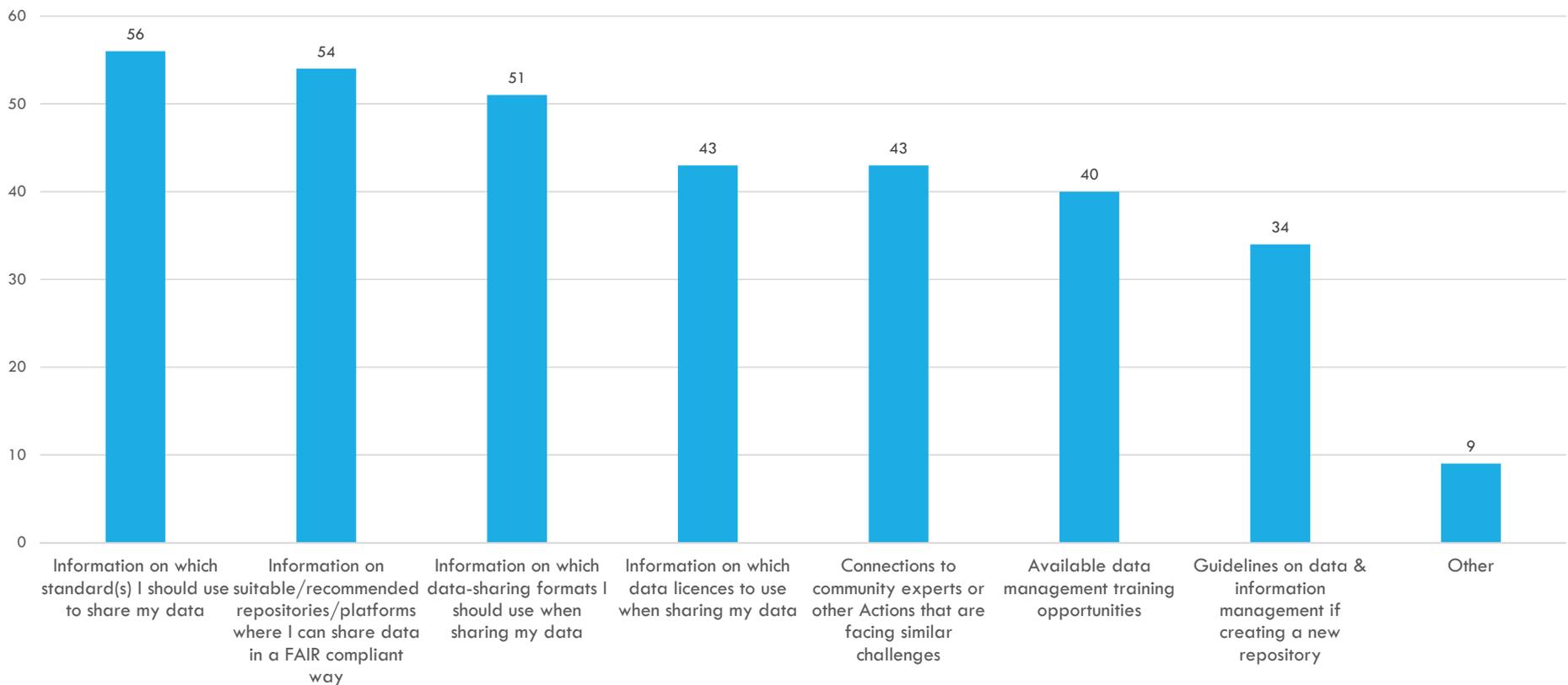
HOW YOU USE YOUR DATA?

What would be helpful for finding the data/data products needed
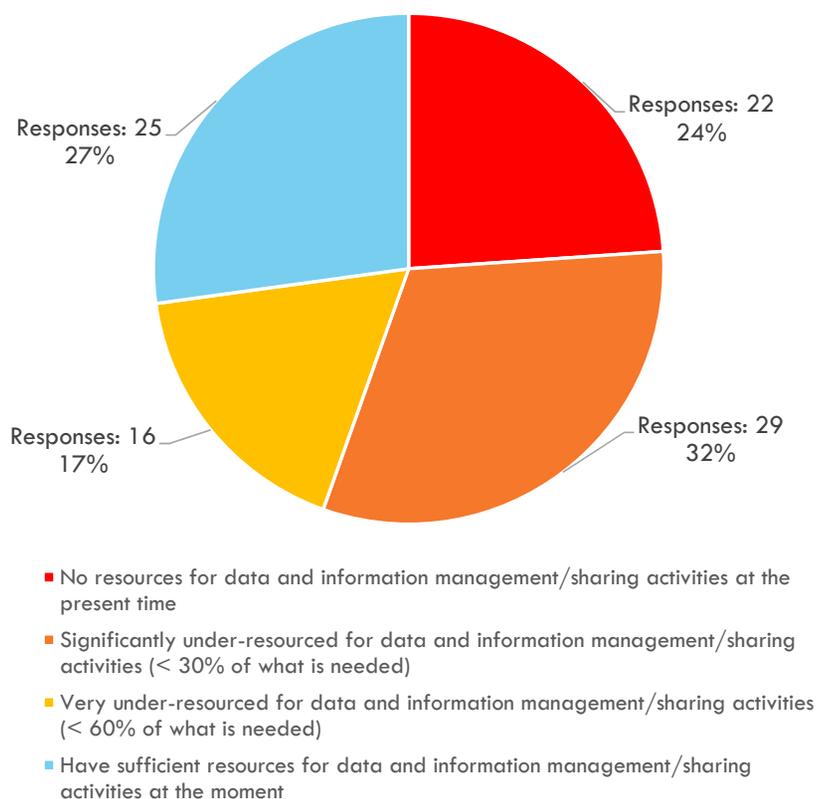
SUPPORT FROM THE DCO-ODS

## Types of help Actions seek from an online data helpdesk

AVAILABLE RESOURCES TO SUPPORT THE DATA AND INFORMATION MANAGEMENT/SHARING ACTIVITIES

Ocean Data Sharing | Decade Coordination Office

IODE International Oceanographic Data and Information Exchange

Resource availability for data and information management and sharing activities reported by Actions

Responses: 22
24%

Responses: 25
27%

Responses: 16
17%

Responses: 29
32%

- ■ No resources for data and information management/sharing activities at the present time
- ■ Significantly under-resourced for data and information management/sharing activities (< 30% of what is needed)
- ■ Very under-resourced for data and information management/sharing activities (< 60% of what is needed)
- ■ Have sufficient resources for data and information management/sharing activities at the moment

Kinds of resources are most required by Actions

	Funding	Staff	apacity	Knowledge
	79	61	38	37
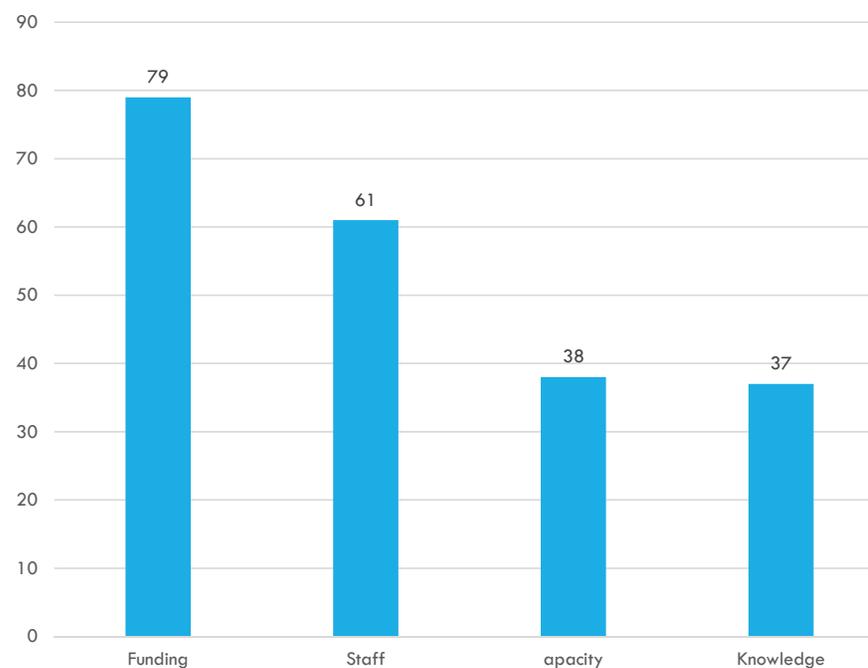
The DCO Ocean Data Sharing
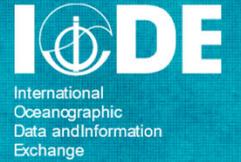# Working together towards a lasting Legacy

Implementation of the Decade data and information Strategy to:

- Enable a federated ocean digital ecosystem [working with Ocean Data 2030, DSIG, DCG, DCC-OP, DCO-OO]
- Transform data management & sharing practices/tools
- Promote a cultural change across all disciplines
- Make it easier for everyone (science, citizens, blue economy and public bodies) to find, access and share data, information and knowledge
- Provide the data, services and information to:
  - Fill knowledge gaps
  - Enable decision-makers to make informed choices
  - Promote ocean literacy
  - Support a sustainable blue economy
  - Address the global challenges we face

THANK YOU