**Reference metadata template for data reported on the Sustainable Development Goals (SDGs)**

The purpose of this template is for international agencies to submit reference metadata on the agreed upon tier I and II global indicators and associated data for which they are responsible, in order to monitor the Sustainable Development Goals (SDGs) and targets in a consistent manner. We appreciate the work done by many agencies to prepare previous versions of their metadata and submit it to UNSD In order to ensure further coherence and consistency of the metadata that will be presented alongside the SDG indicator database, we are requesting additional and more uniform reference metadata on the global indicators and associated data that you are reporting.

While we realise this form is detailed, your willingness to provide this reference metadata in a standard format will be vital to users better understanding of the global indicators and associated data you have provided. We hope any metadata submitted previously can be copied and pasted into the relevant section of this form. Any metadata that was previously submitted to UNSD can be found at: [http://unstats.un.org/sdgs/iaeg-sdgs/metadata-compilation/](https://www.google.com/url?q=http://unstats.un.org/sdgs/iaeg-sdgs/metadata-compilation/&sa=D&ust=1466027477693000&usg=AFQjCNFlmrpuY54k6VytW1h6omz-Opz6Jw).

This form should be completed by the international agencies that provided their data for inclusion in the SDG progress report and associated database. Please replace the instruction text shaded in yellow with the appropriate text describing the reference metadata for that section (i.e. definition, rationale, etc.). Please try to make your responses as concise as possible while making sure to include all relevant information. For more detailed methodological information, a link can be included in the reference section (see page 4).

If there are any questions regarding SDG metadata or this form, please contact Zin Lin at [lin@un.org](mailto:lin@un.org).

Goal :

Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Target:

*14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.*

Indicator:

*14.a.1 Proportion of total research budget allocated to research in the field of marine technology.*

Institutional information

Organization(s):

Intergovernmental Oceanographic Commission of UNESCO

**Contact person(s):**

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Concepts and definitions

**Definition:**

Definitions and mechanisms used in the development of the SDG indicator 14.a.1 are based on the IOC Criteria and Guidelines on Transfer of Marine Technology and are further explained in the Global Ocean Science Report (GOSR) .

Marine technology as used in the indicator and as defined in the criteria and guidelines refers to instruments, equipment, vessels, processes and methodologies required to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean and coastal areas. Toward this end, marine technology may include any of the following components:

a) Information and data, in a user-friendly format, on marine sciences and related marine operations and services; b) Manuals, guidelines, criteria, standards, reference materials c) Sampling and methodology equipment (e.g., for water, geological, biological, chemical samples); d) Observation facilities and equipment (e.g. remote sensing equipment, buoys, tide gauges, shipboard and other means of ocean observation); e) Equipment for in situ and laboratory observations, analysis and experimentation; f) Computer and computer software, including models and modelling techniques; g) Expertise, knowledge, skills, technical/scientific/legal know-how and analytical methods related to marine scientific research and observation.

This indicator shows the annual national governmental research budget in the field of marine technology relative to the national governmental research and development budget in general.

Unit: percentage; raw data in national currency. The proportion can be calculated, and if needed, data can be converted by the international agency into USD.

**Rationale:**

Sustained investment in research and development (R&D), including ocean research, remains essential to advance knowledge and to develop new technology needed to support modern economies. The ocean economy yields various benefits in terms of employment, revenues and innovation in many domains. Its current developments are largely based on decades of science and R&D investments by governments around the world. Baseline information on ocean science funding, as delivered by the indicator 14.a.1 can be used as a starting point for more directed, tailored investment and new capacity development strategies, and to support the case for ensuring maximum impact of ocean research, for example through marine technology and knowledge transfer from government-funded marine and maritime R&D projects.

Annual (2009-2013) baseline information for 24 countries is presented in the GOSR (Isensee, K., Horn, L. and Schaaper, M. 2017. The funding for ocean science. In: In: IOC UNESCO, Global Ocean Science Report—The current status of ocean science around the world. L. Valdés et al. (eds). Paris, UNESCO, pp. 80–97).

**Concepts:**

The concepts used for the definition and calculation of the indicator 14.a.1 are based on similar concepts used in the UNESCO Science Report (2010, 2015).These reports present GERD data (gross domestic expenditure on research and experimental development) as a share of GDP (gross domestic product) and further provide the R&D (research and development) expenditure by sector of performance in % (Table S2 in the 2015 report). In addition UIS publishes science field specific R&D, e.g. natural science (http://data.uis.unesco.org/).

The definitions and classifications used to collect R&D data are based on the ‘Frascati Manaual: Proposed Standard Practice for Surveys on Research and Experimental Development’ (OECD).

**Comments and limitations:**

Due to the fact that no agreed mechanism to assess ocean science capacity existed till the first edition of the Global Ocean Science Report, national reporting mechanisms are scarce and/or are not aligned, leading to small scale capacity development and technology transfer initiatives. However, with the framework of 14.a and the new reporting mechanism in place, global and regional technology and knowledge transfer can be conducted in resource and need adapted manner based on global inventories and comparisons.

Methodology

**Computation Method:**

Indicator 14.a.1 = National governmental ocean science expenditure / National governmental R&D expenditure

National governmental R&D expenditure data are assessed annually by the UNESCO Institute for Statistics (UIS).

National governmental ocean science expenditures are envisaged to be assessed biannually via the GOSR data portal (IOC-XXIX/2 Annex 10)

The development of the GOSR data repository/data portal will take place in strong collaboration with UIS and IOC (at Headquarters and at the IOC Project Office for IODE, Oostende, Belgium).

**Disaggregation:**

National data set with updated every two years, possibility for regional and global aggregation

**Treatment of missing values:**

* At country level

In case countries do not provide data, no estimate will be calculated.

* At regional and global levels

For regional and global estimates/averages, only data received from Member States will be taken into account, missing values are not imputed or otherwise estimated.

**Regional aggregates:**

Each national contribution is weighted equally to calculate average values for the regional and global estimates.

**Sources of discrepancies:**

As this indicator only takes into account data submitted by Member States, there are no discrepancies between estimates and submitted data sets.

**Methods and guidance available to countries for the compilation of the data at the national level:**

* No particular guidance for the national data compilation exists as the organization of ocean science differs among Member States. Ways introduced to obtain relevant data are: IOC focal points consult the respective ministry responsible for ocean science to obtain the data; IOC focal points contact universities and intuitions individually.
* The novelty of the GOSR and therefore also the data it contains required the IOC secretariat to collect the data via its national focal point until now. Future data collections are expected to be a mixture of direct requests to NSOs, as new national reporting mechanisms are now installed allowing them to provide the required information (e.g. Colombia, Canada, Italy; document IOC-XXIX/2 Annex 14), questionnaires to the IOC national focal points and collaboration with National Oceanographic Data Centres. The GERD (gross domestic expenditure on research and development) data are obtained from the UNESCO Institute for Statistics, based on information directly provided from NSOs.

**Quality assurance**

* Experts at the national and colleagues from UIS assist in the data quality assessment, comparing indicator values with the national expenditure for Natural Sciences (UIS) allow to identify discrepancies. In the future new values will be compared to previously obtained information. In case of discrepancies, the IOC secretariat will consult the data providers individually.
* Combination of: Automated quality control by data portal; National quality control; IOC.

Data Sources

**Description:**

Data sources: biannual direct submission to the GOSR data portal (currently in development) and the GOSR questionnaire biannual.

The questionnaire used for the first edition of the GOSR will be reviewed by the Editorial Board of the GOSR, IOC (at Headquarters and at the IOC Project Office for IODE, Oostende, Belgium), as well as UIS. Assessment from 2018 on will be conducted with an improved questionnaire.

As mentioned previously the novelty of the GOSR and required the IOC secretariat to collect the data via its national focal point until now. Future data collections are expected to be a mixture of direct requests to NSOs, as new national reporting mechanisms are now installed allowing them to provide the required information (e.g. Colombia, Canada, Italy; (document IOC-XXIX/2 Annex 14), questionnaires to the IOC national focal points and collaboration with National Oceanographic Data Centres. The GERD (gross domestic expenditure on research and development) data were obtained from the UNESCO Institute for Statistics, based on information directly provided from NSOs.

**Collection process:**

1. Counterparts:

As mentioned in the previous paragraph the official counterparts are the IOC focal points and well as National Oceanographic and Statistical Data Centres.

1. Validation and consultation process:

These counterparts are invited to provide references for the information provided.

1. Adjustments:

No adjustments are/will be made, as no other organization obtains similar data. Similar indicators are also reported in the ‘UNESCO Science Report’ and via the UIS website.

Data Availability

**Description:**

The table below shows the result of research budget allocated to research in the field of marine technology. The first assessments includes information for 25 countries for the time period from 2009-2013 (or for a sub-set of these years). These data were published in the Global Ocean Science Report (2017).

Table . Percentage national ocean science expenditure of GERD for countries which provided information regarding ocean science expenditure via the GOSR questionnaire (sources GERD,: UIS, 2015; ocean science expenditure: GOSR questionnaire, 2015; average non-weighted). Note: green fields indicate a percentage higher than 1.5 and yellow fields indicate percentages higher than 0.5.

|  | **Percentage (%) Ocean science expenditure of GERD** | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Average 2009-2013** | **2009** | **2010** | **2011** | **2012** | **2013** |
| Argentina | 0.16 | 0.11 | 0.14 | 0.15 | 0.23 |  |
| Australia | 0.74 |  | 0.72 | 0.76 |  |  |
| Belgium | 0.07 | 0.10 | 0.07 | 0.05 | 0.05 |  |
| Canada (DFO) | 0.54 | 0.51 | 0.54 | 0.60 | 0.54 | 0.53 |
| Chile | 0.20 | 0.36 | 0.11 | 0.15 | 0.20 |  |
| Colombia | 0.39 | 0.40 | 0.39 | 0.43 | 0.36 | 0.35 |
| Croatia |  |  |  |  |  | 4.73 |
| Ecuador | 0.03 | 0.02 | 0.03 | 0.05 |  |  |
| Finland | 0.14 | 0.14 | 0.16 | 0.00 | 0.20 | 0.20 |
| France |  |  |  |  |  | 0.79 |
| Germany |  |  |  |  |  | 0.40 |
| India | 0.77 | 0.61 | 0.77 | 0.92 |  |  |
| Italy | 0.88 | 0.69 | 0.75 | 0.87 | 1.04 | 1.04 |
| Japan | 0.09 | 0.11 | 0.07 | 0.08 | 0.08 | 0.11 |
| Kuwait | 0.16 | 0.16 | 0.18 | 0.19 | 0.19 | 0.06 |
| Morocco |  |  | 0.37 |  |  |  |
| Norway | 3.18 | 2.69 |  | 3.28 |  | 3.58 |
| Republic of Korea | 0.44 | 0.62 | 0.40 | 0.41 | 0.44 | 0.32 |
| Romania | 0.50 | 0.47 | 0.35 | 0.51 | 0.54 | 0.65 |
| Russian Federation | 0.04 | 0.03 | 0.04 | 0.04 | 0.03 | 0.04 |
| Spain (IEO) | 0.28 |  | 0.37 | 0.37 | 0.36 | 0.28 |
| Thailand |  |  |  | 2.02 |  |  |
| Trinidad & Tobago | 1.81 | 1.03 | 1.63 | 2.36 | 2.20 |  |
| Turkey | 0.07 |  | 0.06 | 0.04 | 0.07 | 0.09 |
| USA |  |  |  |  | 2.55 |  |

**Time series:**

To date data are available for the years 2009-2013.

Calendar

**Data collection:**

The next data collection is planned for the first quarter of 2018 for the years 2014-2016.

**Data release:**

Expected dates of release of new data: First/Second quarter of 2018 for the years 2014-2016.

Data providers

IOC focal points

NSOs

UIS

Data compilers

Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO)

UNESCO Institute for Statistics (UIS)

References

IOC-UNESCO (2017), Global Ocean Science Report—The current status of ocean science around the world, L. Valdés et al. (eds), UNESCO Publishing, Paris

Isensee, K., Horn, L. and Schaaper, M. 2017. The funding for ocean science. In: In: IOC-UNESCO, Global Ocean Science Report—The current status of ocean science around the world. L. Valdés et al. (eds). Paris, UNESCO, pp. 80–97.

GOSR report (relevant chapters 2 and 4)

<http://en.unesco.org/gosr>

UNESCO Science Report 2010, 2015

<https://en.unesco.org/unesco_science_report>

IOC Assembly Decisions: IOC-XXIX/5.1. and IOC-XXIX/9.1.)

<http://www.ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=19770>

IOC-XXIX/2 Annex 14

<http://ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=19589>

R&D relevant data

<http://data.uis.unesco.org/>

Definition/Concepts: Frascati Manaual: Proposed Standard Practice for Surveys on Research and Experimental Development’ (OECD)

Related indicators

Links to SDG 17, SDG 5

Targets: to all other SDG 14 targets as science is crucial to protect and conserve the oceans’ resoources.