NLAI–Seabed 2030 Online Survey Report

Results and findings of combined surveys

Vol 2 - Addendum

August 2021

SEABED 2030 Online Survey Report

Overview

This addendum supports the results and findings of combined surveys report previously submitted as Volume 2 of the Seabed 2030 online survey. The main body of this report provides an overview on the remaining 11 responses received to the survey and compares the results to the combined surveys findings which can be found at Annex A. This small addition of responses in the closing weeks of the survey should not be viewed in isolation or distract from the overwhelming successes of the combined online surveys. The total number of respondents to the Seabed 2030 online survey is 796, which has by far exceeded original expectations. There have been responses from 90 countries across the world, providing for the first time a global view on the need and requirements for the world's oceans to be mapped.

Executive Summary

The additional results in this addendum report completely align and support the key findings from the previous report and are shown below. The findings from 90 countries provides for the first time a comprehensive global evidence set outlining seabed mapping needs and priorities across every maritime sector. The data and views obtained from the surveys now need to be transposed into a prioritised list for seabed mapping and this needs to be shared with the world's hydrographic offices to get their individual views so that a substantiated priority list can be created.

Once a corroborated priority list has been developed it needs to be incorporated into a global weighted and prioritised seabed mapping model. When created then a combination of the data gathered from the surveys in conjunction with a priority list and global model will all provide a large proportion of the information, evidence, and justification to be incorporated into business cases to secure funding for seabed mapping.

In addition, the second online survey has identified a further 57 potential sources of bathymetric data which, if not already doing so, may contribute to the Seabed 2030 project.

The responses received via the two online surveys showed that there is complete admiration and unswerving support for IHO, GEBCO, the Nippon Foundation and the Seabed 2030 project.

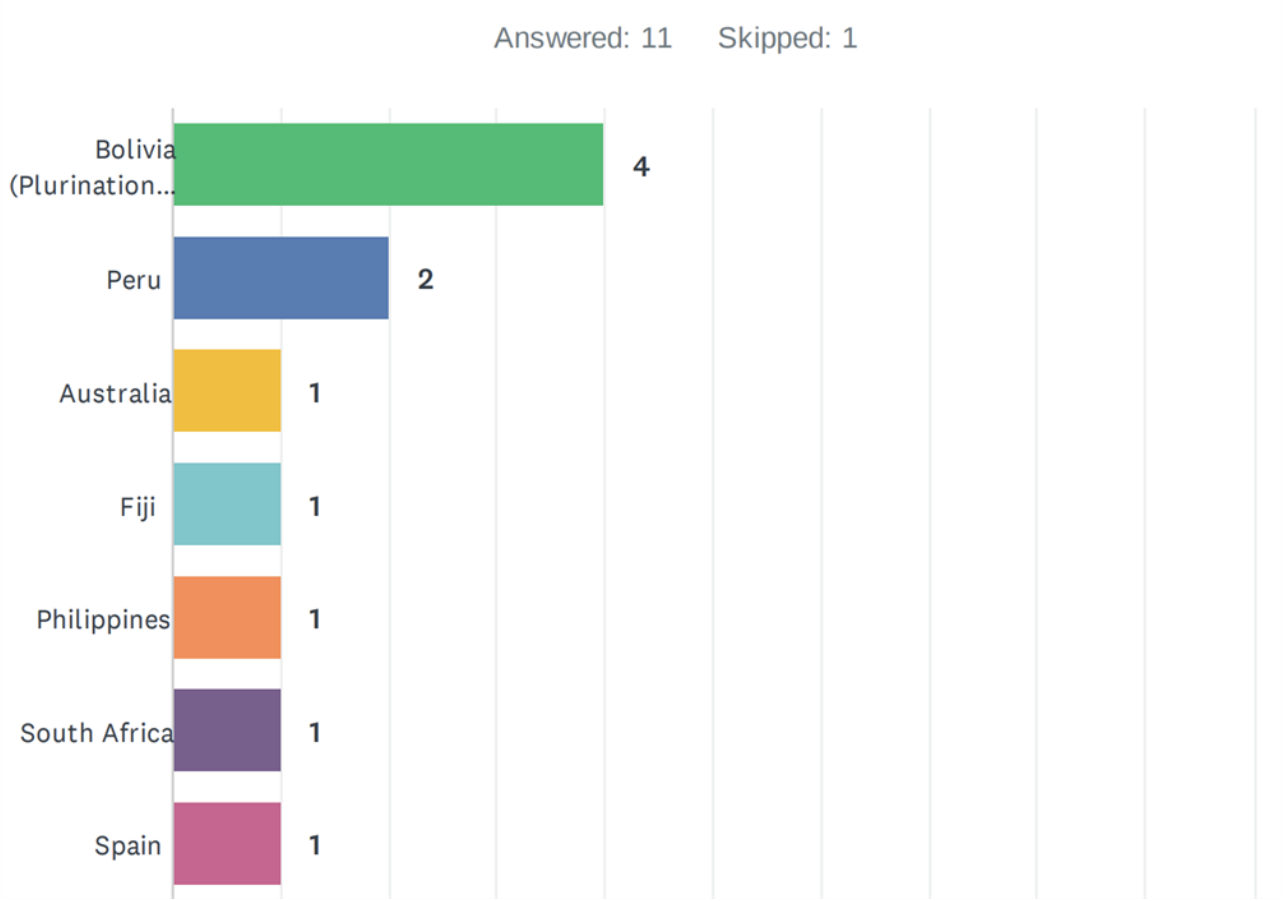
Key findings from the combined survey include:

- **People have contributed and given their views across 90 nations worldwide.**
- **The results of the second survey closely align with those of the first survey, providing a corroborated and richer body of evidence.**
- **Countries and regions where there was little or no response in the first survey have made significant contributions to the second survey. Overall, the combined survey results now provide a comprehensive dataset, which reflects a global view and perspective.**
- **The second survey has identified 57 potential sources of bathymetric data which could contribute to the Seabed 2030 project. Across the two surveys there were in total 154 potential sources of new data.**
- **The key findings from the first online survey have all been reaffirmed in the results of the second survey.**

Addendum survey results

The results of the additional 11 respondents are shown below, whilst it is difficult to draw together any conclusive conclusions from such a small data set a snapshot view has been taken. This small sample of results has been compared to the combined survey results at Annex A, whilst there are some differences which is most probably as a resultant of a much smaller evidence set by and large the results align well with the findings of the combined surveys.

Q5 In what country do you mainly work?



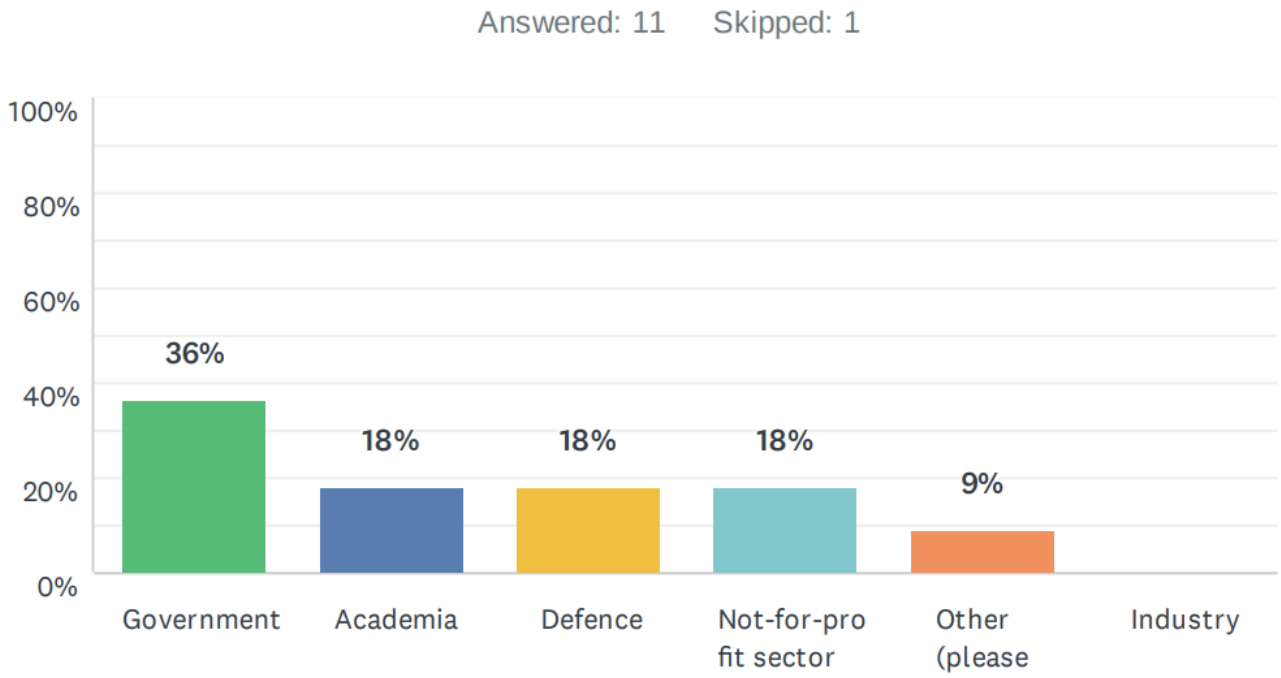
The responses of the 11 respondents' countries by percentage level and total responses overall is as follows:

Bolivia (Plurinational State of) (21)	36%	4
Peru (134)	18%	2
Australia (9)	9%	1
Fiji (59)	9%	1
Philippines (135)	9%	1
South Africa (160)	9%	1
Spain (162)	9%	1

The nations of the 11 respondents in the addendum survey are Bolivia, Peru, Australia, Fiji, Philippines, South Africa, and Spain, respectively. Bolivia came in first making up 36% of the total respondents, followed by Peru with 18%, and the other countries are equally distributed and tied at 9% each. The respondents display a

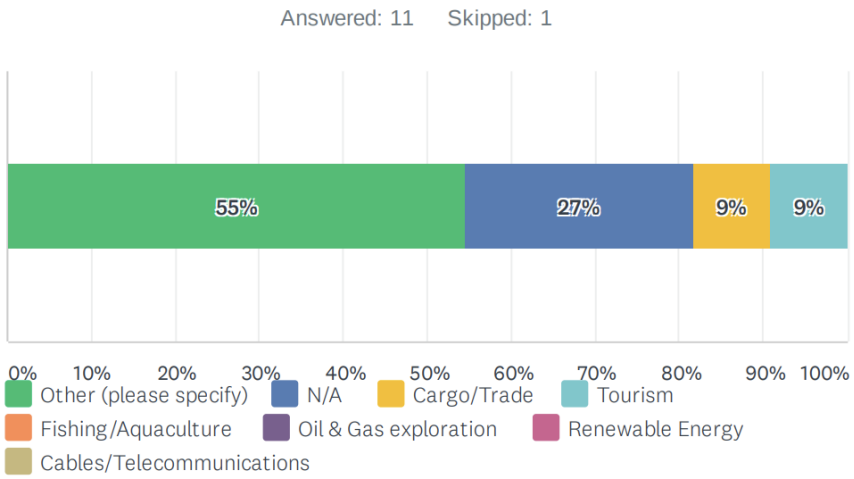
balance of ethnicities across the world and provide confirmation that the targeted promoting strategy of the second survey did succeed by providing wider global evidence and views.

Q6 What sector do you represent or work in?



The ranking of sectors and percentage levels by and large remains constant and spread out in this addendum survey. Some 36% of respondents' sit within Government, and 18% across the Academia, Defence, and Not-for-profit sector. Thus, when a prioritisation strategy is developed it is recommended that it focuses on these four areas first.

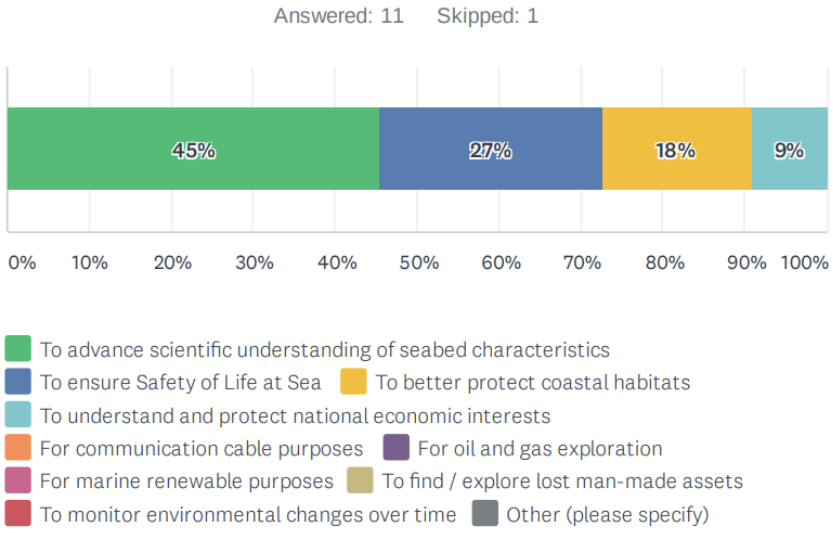
Q7 If you are within the maritime industry, which specific area/sector do you represent?



What is apparent in each of the surveys is that approximately 55% of respondents do not sit within one of the defined maritime industry sectors of; Fishing/Aquaculture, Renewables, Oil & Gas, Cargo/Trade, Tourism and Cables/Telecommunications. The individual comments of responders to this question need to be

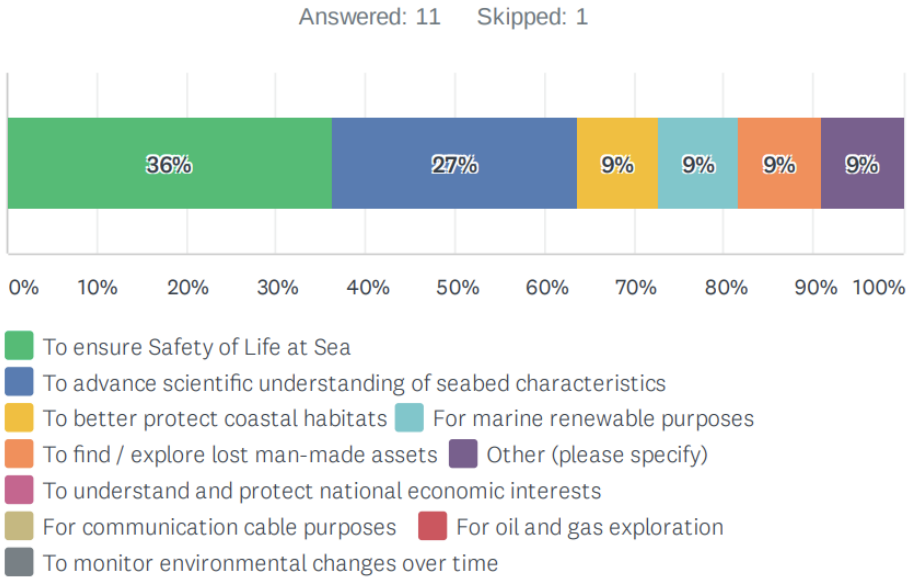
reviewed and analysed closely so that their requirements are reflected when a global prioritisation is developed for seabed surveys.

Q8 What do you consider the main benefit of mapping the world's oceans to be?



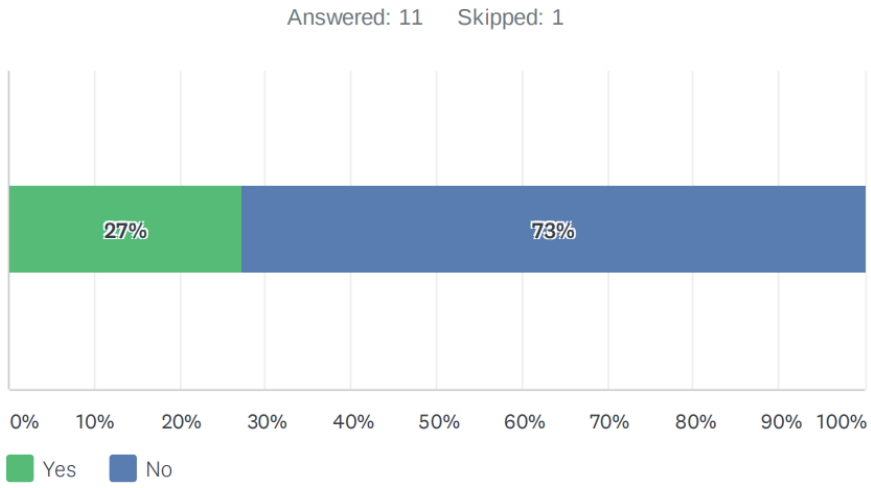
Whilst there were some slight changes in order and percentage levels across the surveys, in this addendum survey, 72% in the addendum survey saw advancing scientific understanding and ensuring safety of life at sea the highest benefits for seabed mapping.

Q9 Why are you particularly interested in mapping the ocean floor?



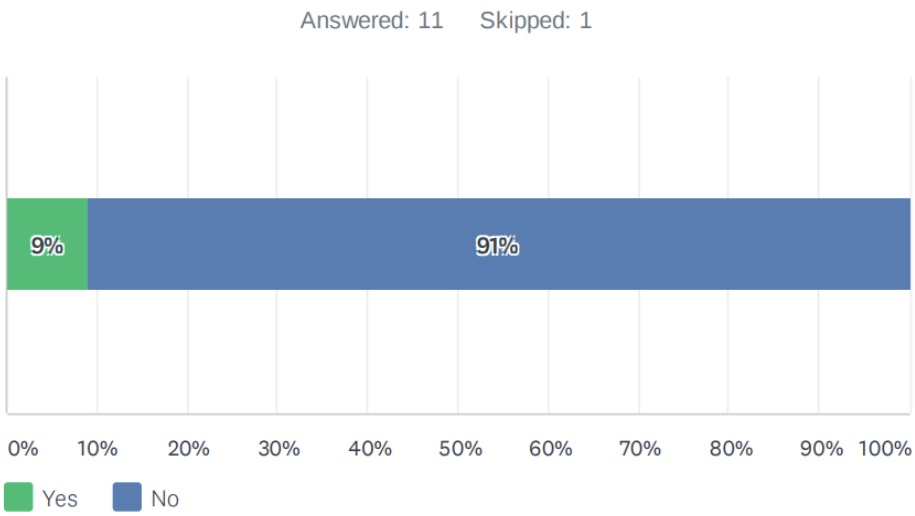
It is not surprising to see that the results of Q9 align and corroborate with those of Q8 above. 63% in the addendum survey saw advancing scientific understanding and ensuring safety of life at sea the primary reasons why they are particularly interested in mapping the ocean floor.

Q10 Have you ever estimated the environmental, social and economic value of mapping the seabed of greatest interest to you?



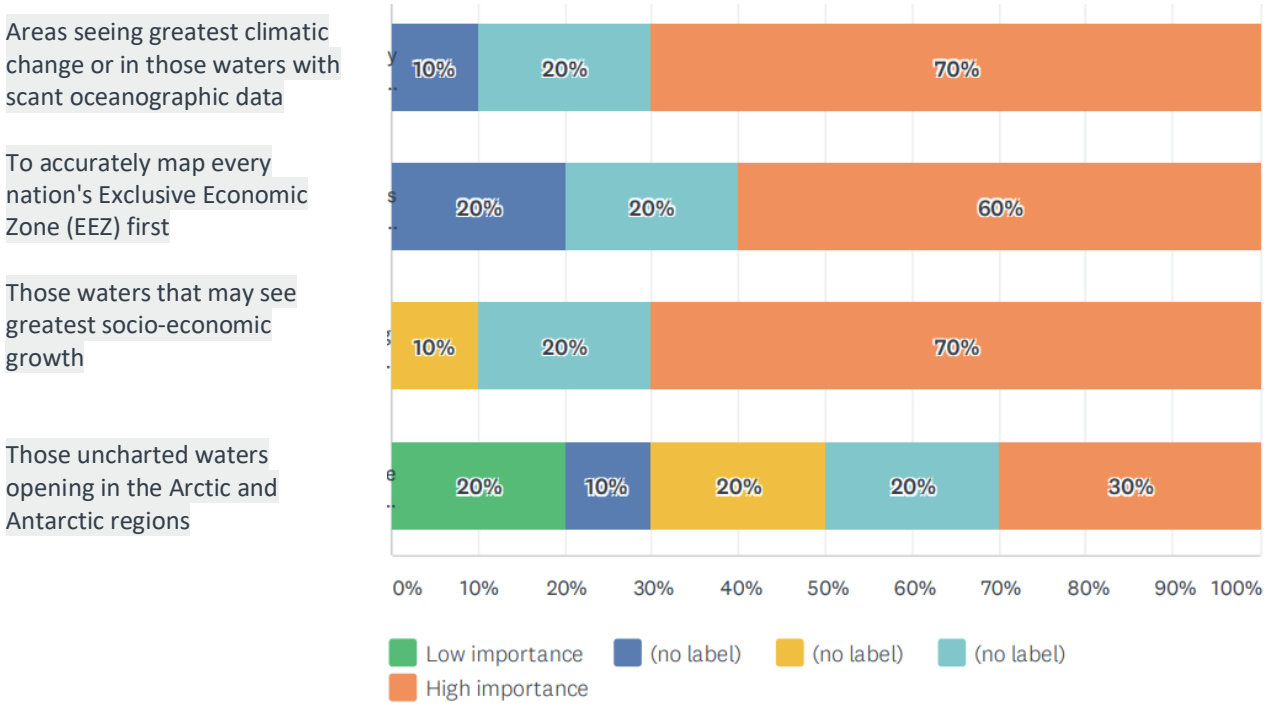
The results of the addendum survey showed that a large majority of respondents have not previously considered the value of mapping the seabed from an environmental, social or economic perspective.

Q11 Are you aware of any third-party models for estimating the environmental, social and economic value of mapping the seabed?



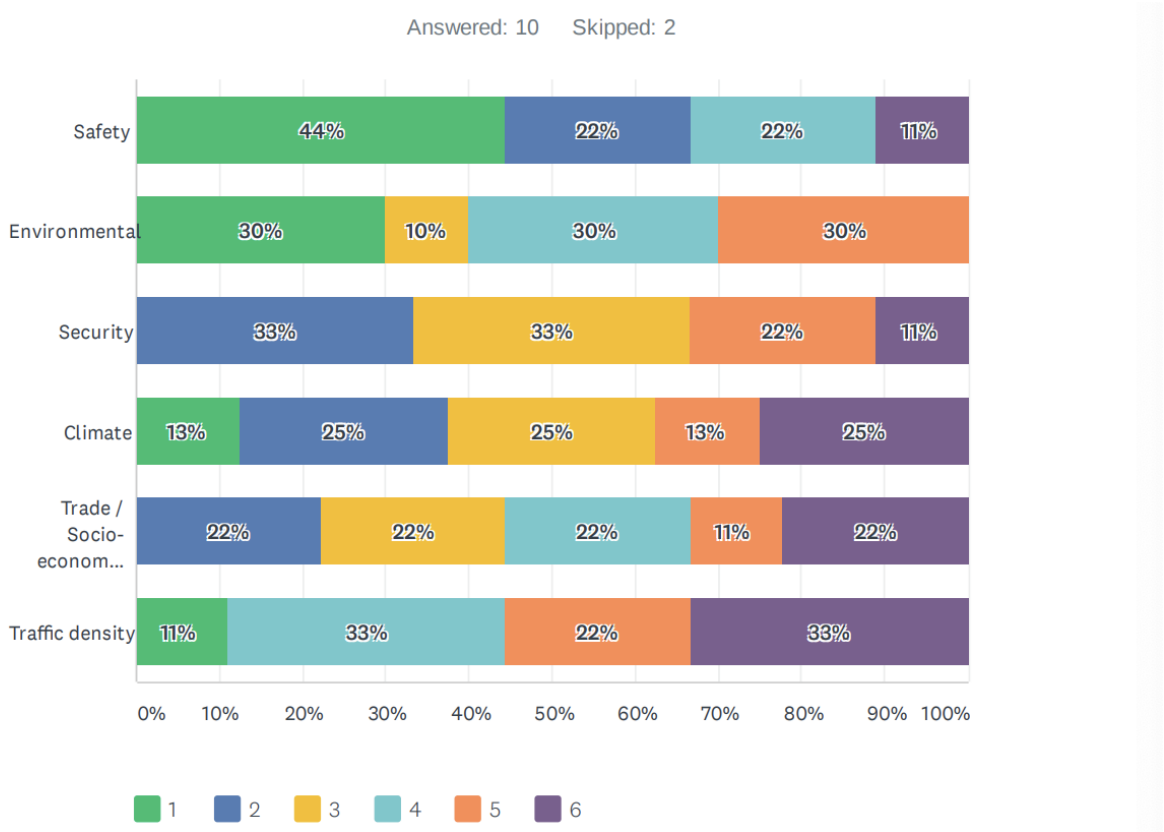
By and large the result to this question is quite staggering. 91% of the respondents are not aware of any third-party models for estimating the environmental, social, and economic value of mapping the seabed. As a global priority list for seabed survey is developed, it is strongly recommended that those views of respondents' who know of models are studied in detail as Seabed 2030 seeks to develop a global model.

Q12 80% of the world's oceans are currently uncharted; how highly do you rate the following priorities?



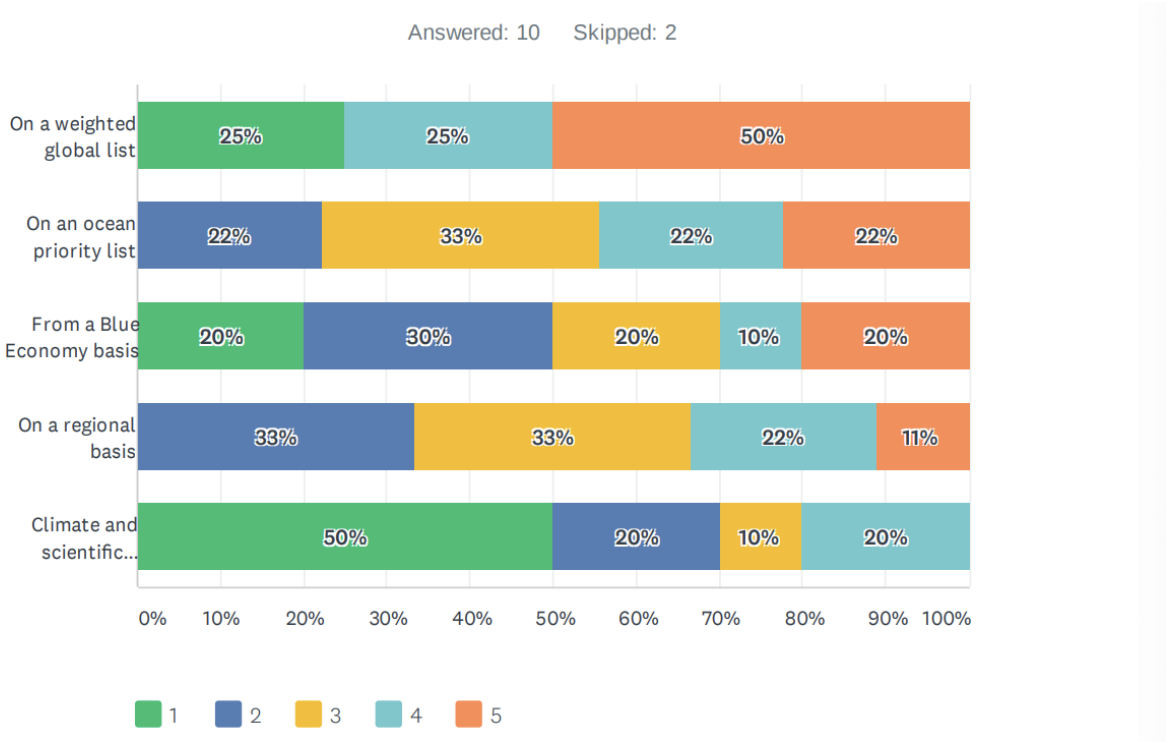
Aligned to Q8 and Q9, 70% of respondents of the addendum survey see the highest priority for surveys in those areas seeing greatest climatic change, areas where little or no oceanographic data has been collected, and waters that may see greatest socio-economic growth. Outside of this, there is a significant view that nations should prioritise the mapping of their own EEZs.

13 Which factors should be given greater weighting within a geospatial prioritisation modelling tool (where 1 is the most important and 6 the least)



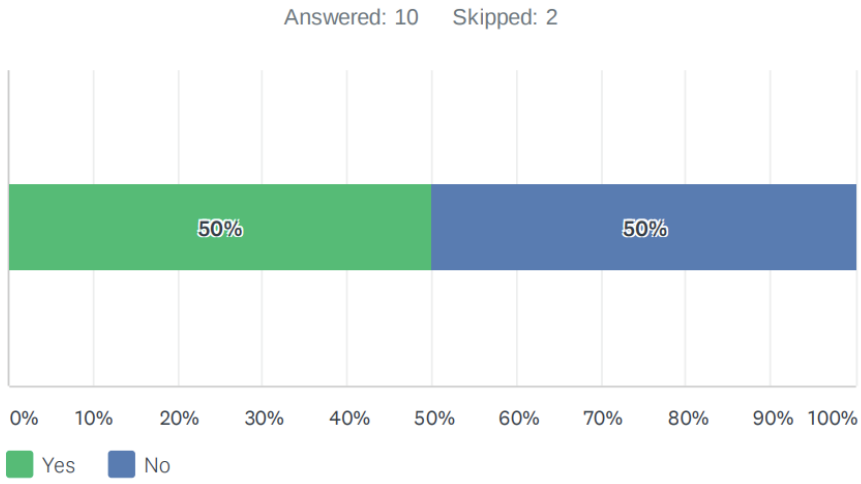
The views of what sectors/aspects should be given greater weighting in a prioritisation model were consistent and spread out across survey 1, survey 2, the combined survey, and the addendum survey. The consistency of evidence provides justification of both prioritisation and weighting when the global model is developed.

Q14 How should we prioritise geospatial surveys (where 1 is the most important and 5 the least)?



Again, it can be seen across the surveys that when prioritising, 50% say that climate change and science should take priority. There was also a noticeable consistency on an equitable percentage level for global weighting, Blue Economy and regional and each of these need to be given equal weighting and priority in the Seabed 2030 survey model.

Q15 Are there any particular areas of the seabed that you are currently trying to get mapped?



The equal split across a small sample set does not provide conclusive evidence, however when compared to the combined surveys 40% answered Yes and 60% answered No.

Q16 If answered ‘yes’…

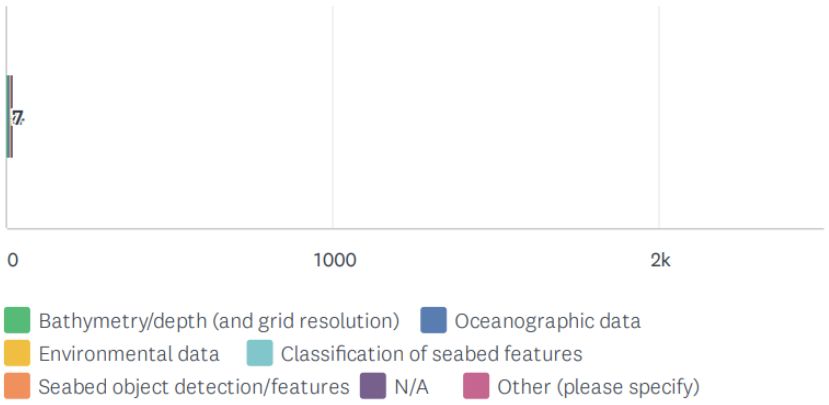
Answered: 5 Skipped: 7

ANSWER CHOICES	RESPONSES	
Have you applied for funding / resource to map this part of the seabed?	100%	5
Have you articulated the environmental, social or economic value of mapping this area of the seabed? If yes, please give details / links.	100%	5
Please share details of your area of interest	100%	5
Why do you want to map this part of the seabed?	100%	5

Individual details and responses to this question can be viewed in the full results document.

Q17 What marine geospatial information is needed by you? Please tick all that apply.

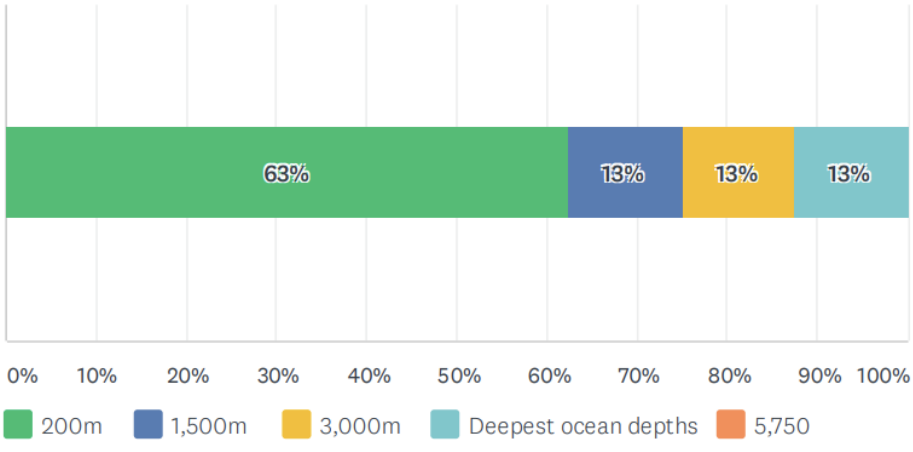
Answered: 8 Skipped: 4



Bathymetric data is the sole and most sought-after data set. Should Seabed 2030 evolve, then serious consideration should be given to widening the availability of other datasets.

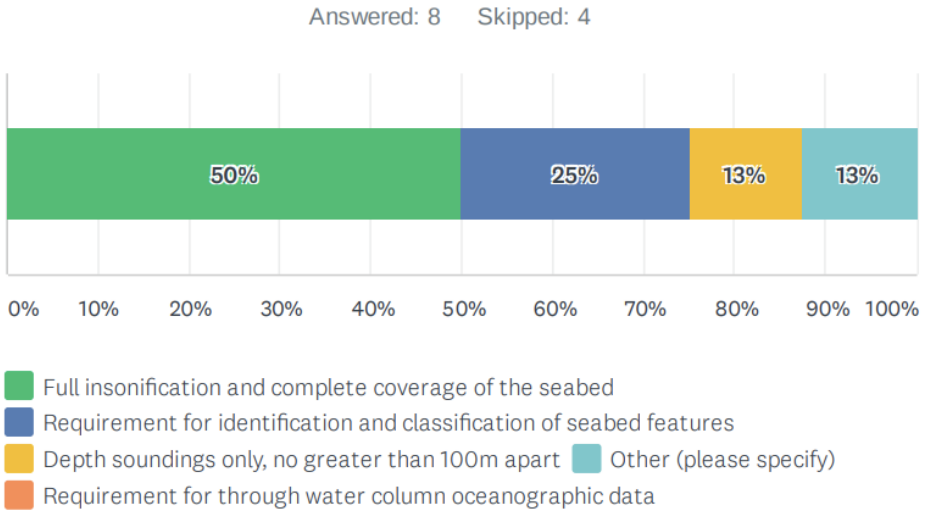
Q18 To what depths do you require marine geospatial information?

Answered: 8 Skipped: 4



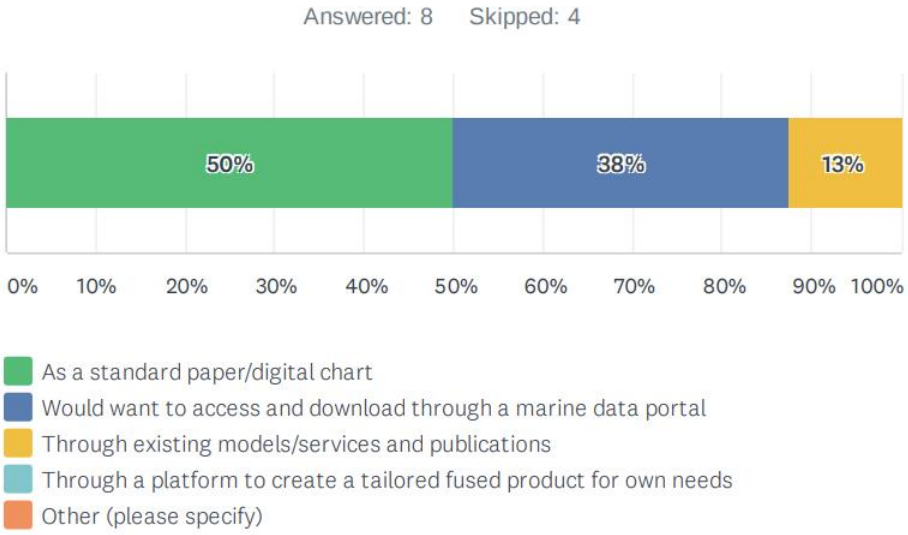
Consistency of percentage levels were seen across each of the surveys. Some 63% require data in the continental shelf depths down to 200m; the data collection technologies capable of surveying to this depth are numerous and differing collection methodologies can be used to collect this data. Whereas 13% require deepest ocean depth data which by its very nature is difficult to collect as well as in continental shelf depths down to 1,500m, 3,000m, and 5,750m respectively. The number of systems and technologies available are fewer in number and the cost to collect bathymetric data is significantly increased in comparison to shallow water depths.

Q19 What level of detail and density of geospatial data is needed?



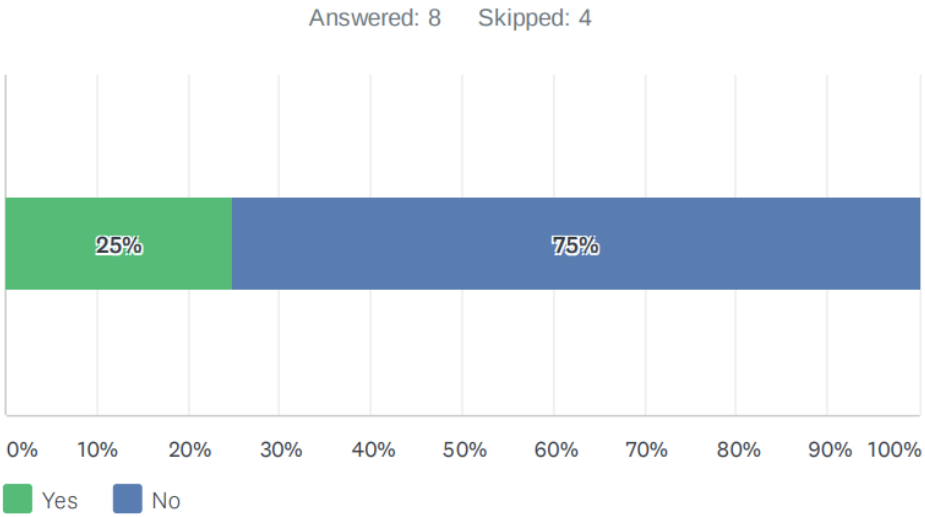
The order of prioritisation and percentage levels for bathymetric data density were consistent across the surveys. Exactly 50% of the respondents would want full insonification of the seabed, and the reasons and justifications for needing full insonification should be carefully reviewed in the detailed survey results. What is well known is that the cost associated for multibeam (full insonification) surveys is far greater than those of single beam surveys. This will be a significant factor and will have bearing when determining the funding requirements needed to map the remaining 80% of the world's oceans.

Q20 How would you wany to use, or access marine geospatial data collected?



The addendum survey showed a high priority for access to marine geospatial data. Fifty percent (50%) of the respondents wants to be able to access the data via a standard paper/digital chart, 38% would want to access and download through a marine data portal, and 13% desire to access data through existing models/services and publications.

Q21 Do you have any existing or forthcoming data that you could contribute to the Seabed 2030 mission?



A significant and key success of the online survey have been the ability to identify pre-existing bathymetric data that has been collected and identifying future bathymetric data planned to be collected by respondents' organisations/companies. Several of the respondents are already supporting and contributing to the Seabed 2030 project, however new bathymetric data sources have been identified in each survey phase.

Q22 Please list any other sources of information you think we should explore.

The specific details and answers given by each respondent to this question can be found in the full results report.

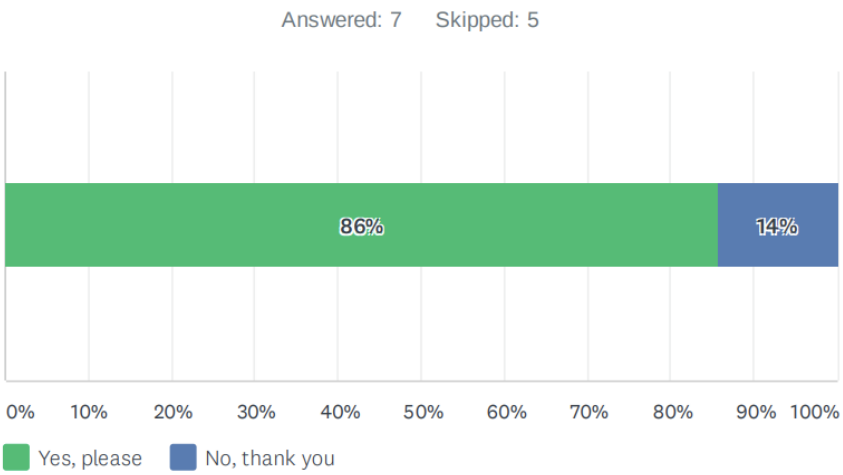
Q23 Is there anything else you would like to add?

The full reports list the detailed views of the respondents, and they should be reviewed and considered when developing the seabed mapping priority list. Below is a selection of two of the responses; what is abundantly apparent is the interest in programs about the Seabed 2030 project and promoting research across all levels.

> *"to promote research in countries with highest risks"*

> *"I'm interested in specialization programs about SEABED 2030. It'll be interesting to improve my hydro-oceanographic knowledge."*

Q24 Would you be interested in receiving the report that emanates from this survey?



By and large most respondents would like to see the reports and findings generated from the surveys they contributed to. It is recommended that these are made available on the Seabed 2030 website for all to see.

Conclusions and Recommendations

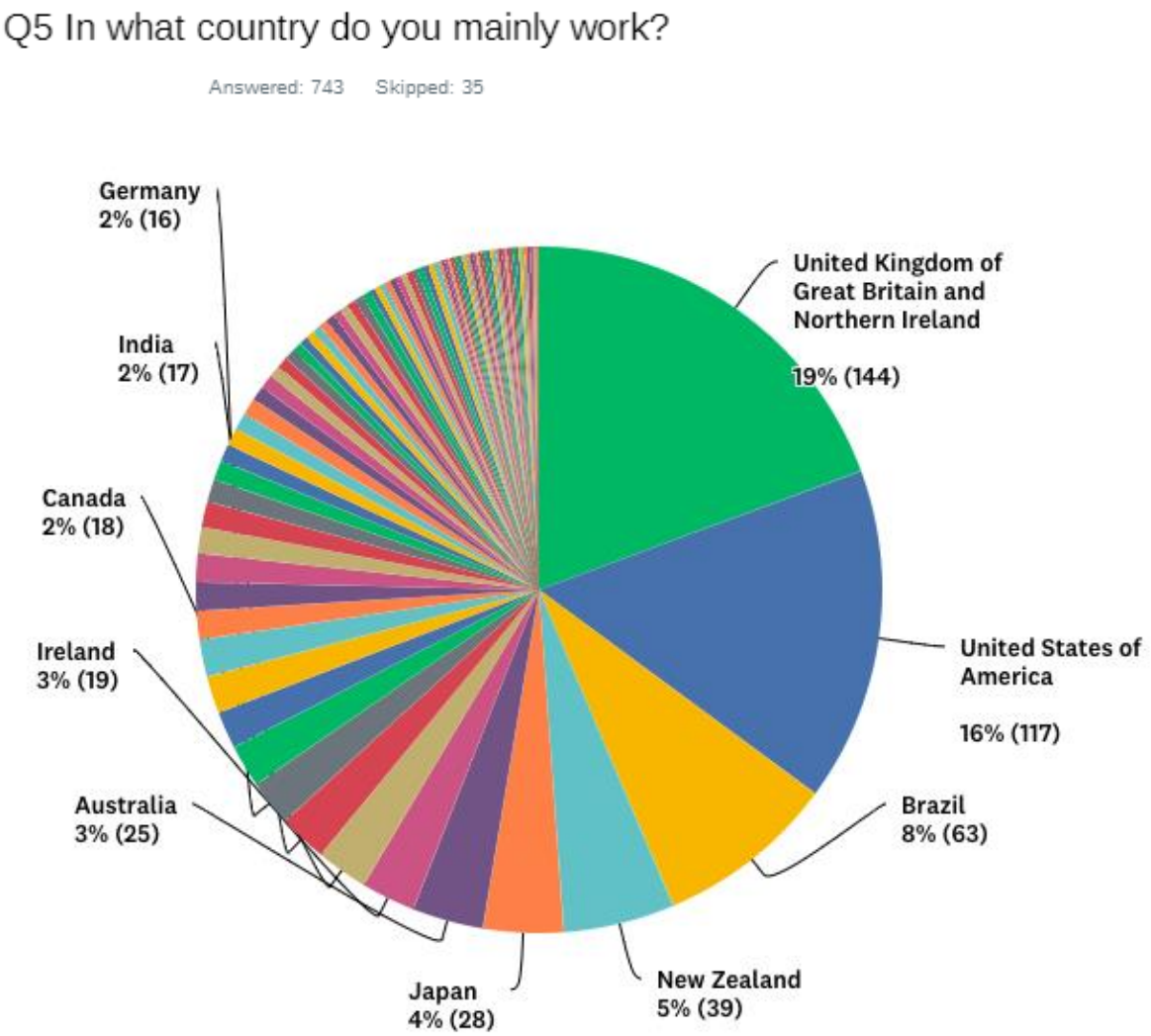
Although, the addendum survey had only 7 countries contributing with 11 respondents in total, hence, there is no sufficient evidence to draw conclusions and recommendations from. In general even with such a small sample of data we see close alignment across a large part of the question set to those results in the combined survey as shown at Annex A.

Notwithstanding, it is recommended that a survey priority list be generated based upon the collective views of the respondents to the online survey, which should then be passed to the world's hydrographic offices and agencies to gather their views. From this, and for the first time a validated global survey priority list can be created. This will then enable the development of a global weighted model to be developed for mapping the world's oceans. It should be noted that this work forms the next stage of the Wind in the Sails project supporting Seabed 2030 and subject to funding approval this work, and activity will take place between October 2021 and March 2022.

The detailed individual comments provided by the respondents to the online surveys should be reviewed in detail, these would provide valuable underpinning evidence and would contribute significantly to the development of a survey mapping priority list.

Combined Survey Results

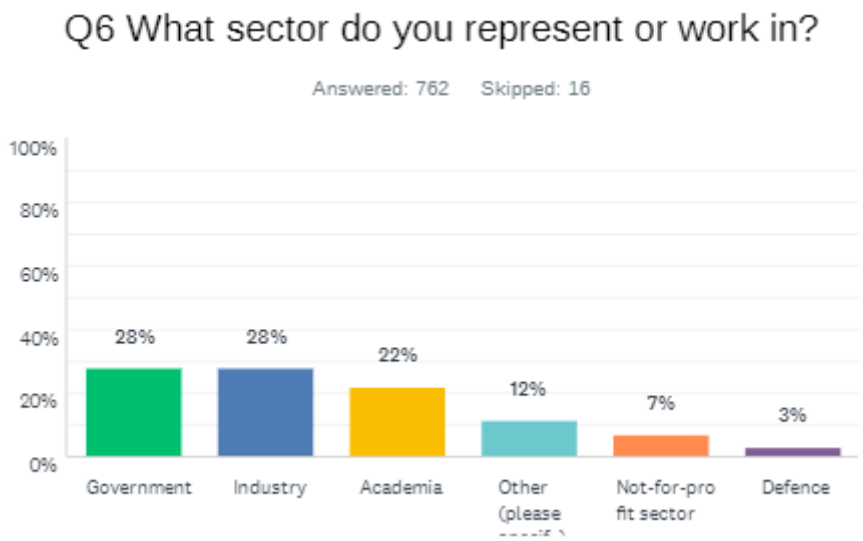
The results from survey 1 and survey 2 have been combined to provide a detailed and comprehensive dataset of evidence. In doing so, it provides a consolidated global view which has been substantiated and corroborated, providing consistency across the two surveys. This considerable and valuable weight of evidence can be used by Seabed 2030 to develop a prioritised global model for seabed mapping.



The responses of the top 10 countries by percentage level and total responses overall is as follows:

United Kingdom of Great Britain and Northern Ireland	19%	144
United States of America	16%	117
Brazil	8%	63
New Zealand	5%	39
Japan	4%	28
Australia	3%	25
Ireland	3%	19
Canada	2%	18
India	2%	17
Germany	2%	16

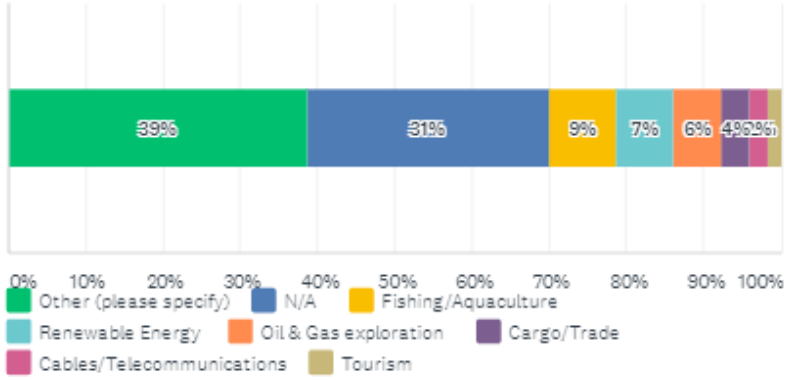
The top 10 nations of responders in the first, second and combined surveys make-up 68%, 69% and 64% of the total respondents' accordingly. Whilst the United Kingdom, United States of America, Australia, Ireland, and France figure in the top 10 of both surveys. It is reassuring to see at Annex A Brazil as top respondent at 18% and Japan fourth with 9%; both are regions and countries where few responses were seen in the first survey. This provides confirmation that the targeted promoting strategy of the second survey did succeed by providing wider global evidence and views.



It was reassuring to see that the ranking of sectors and percentage levels by and large remained constant across first, second and combined surveys. Some 78% of respondents' sit within Government, Industry and Academia and when a prioritisation strategy is developed it is recommended that it focuses on these three areas first.

Q7 If you are within the maritime industry, which specific area/sector do you represent?

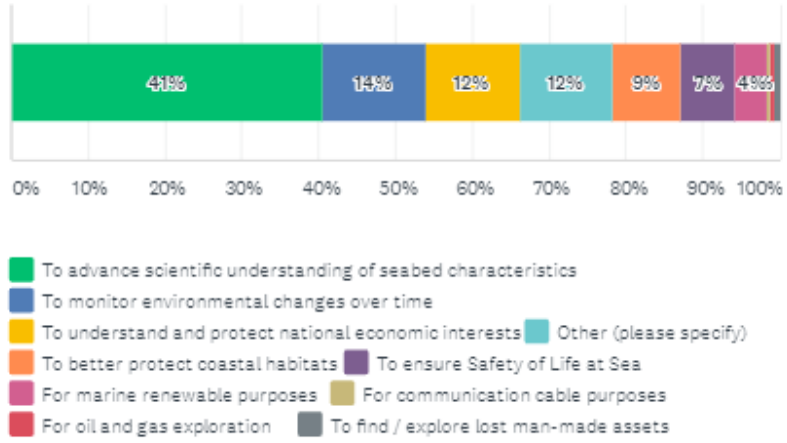
Answered: 719 Skipped: 59



What is apparent in each of the surveys is that approximately 70% of respondents do not sit within one of the defined maritime industry sectors of; Fishing/Aquaculture, Renewables, Oil & Gas, Cargo/Trade, Tourism and Cables/Telecommunications. The individual comments of responders to this question need to be reviewed and analysed closely so that their requirements are reflected when a global prioritisation is developed for seabed surveys.

Q8 What do you consider the main benefit of mapping the world's oceans to be?

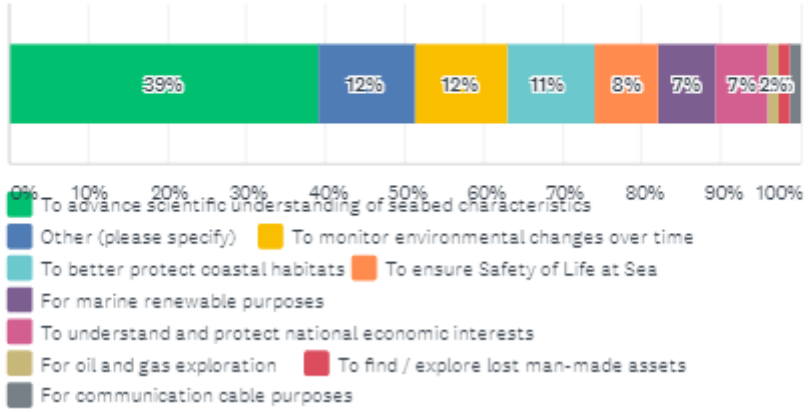
Answered: 711 Skipped: 67



Whilst there were some slight changes in order and percentage levels across the surveys, it was consistent that 55% in each survey saw advancing scientific understanding and monitoring environmental changes over time as providing the highest benefits for seabed mapping.

Q9 Why are you particularly interested in mapping the ocean floor?

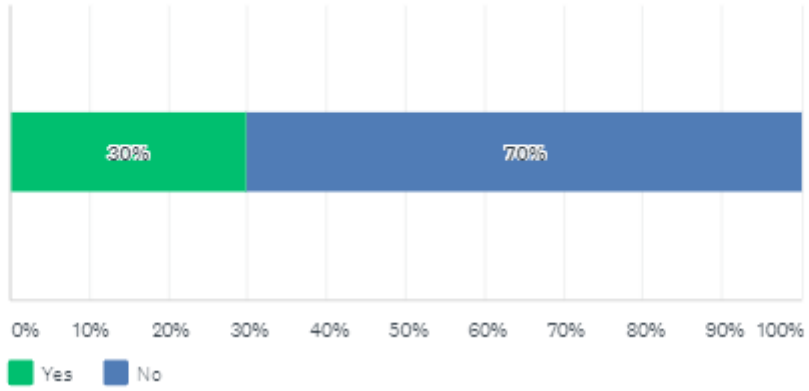
Answered: 705 Skipped: 73



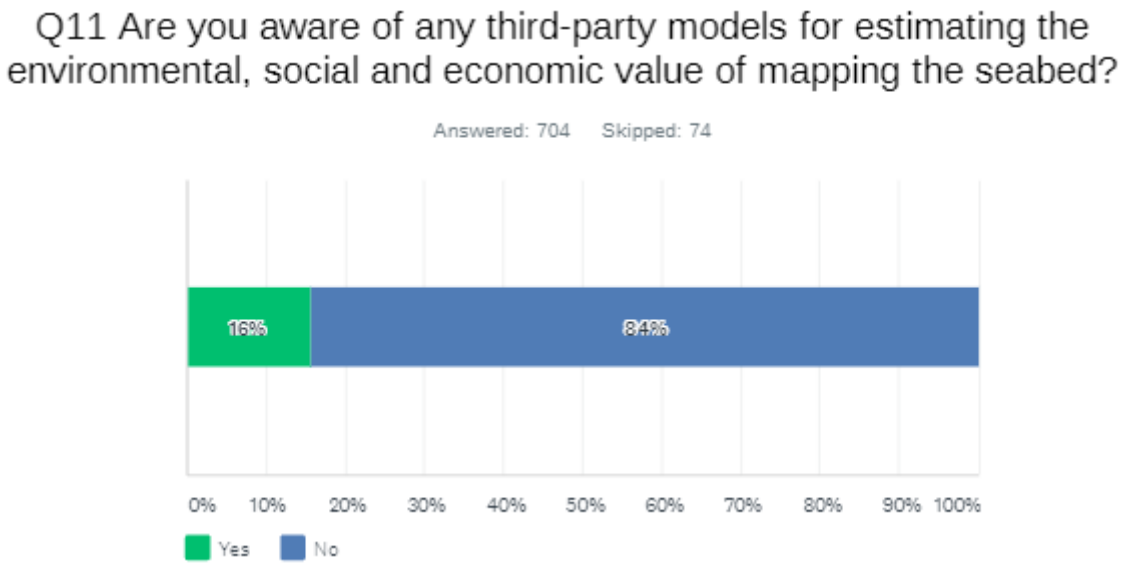
It is not surprising to see that the results of Q9 align and corroborate with those of Q8 above.

Q10 Have you ever estimated the environmental, social and economic value of mapping the seabed of greatest interest to you?

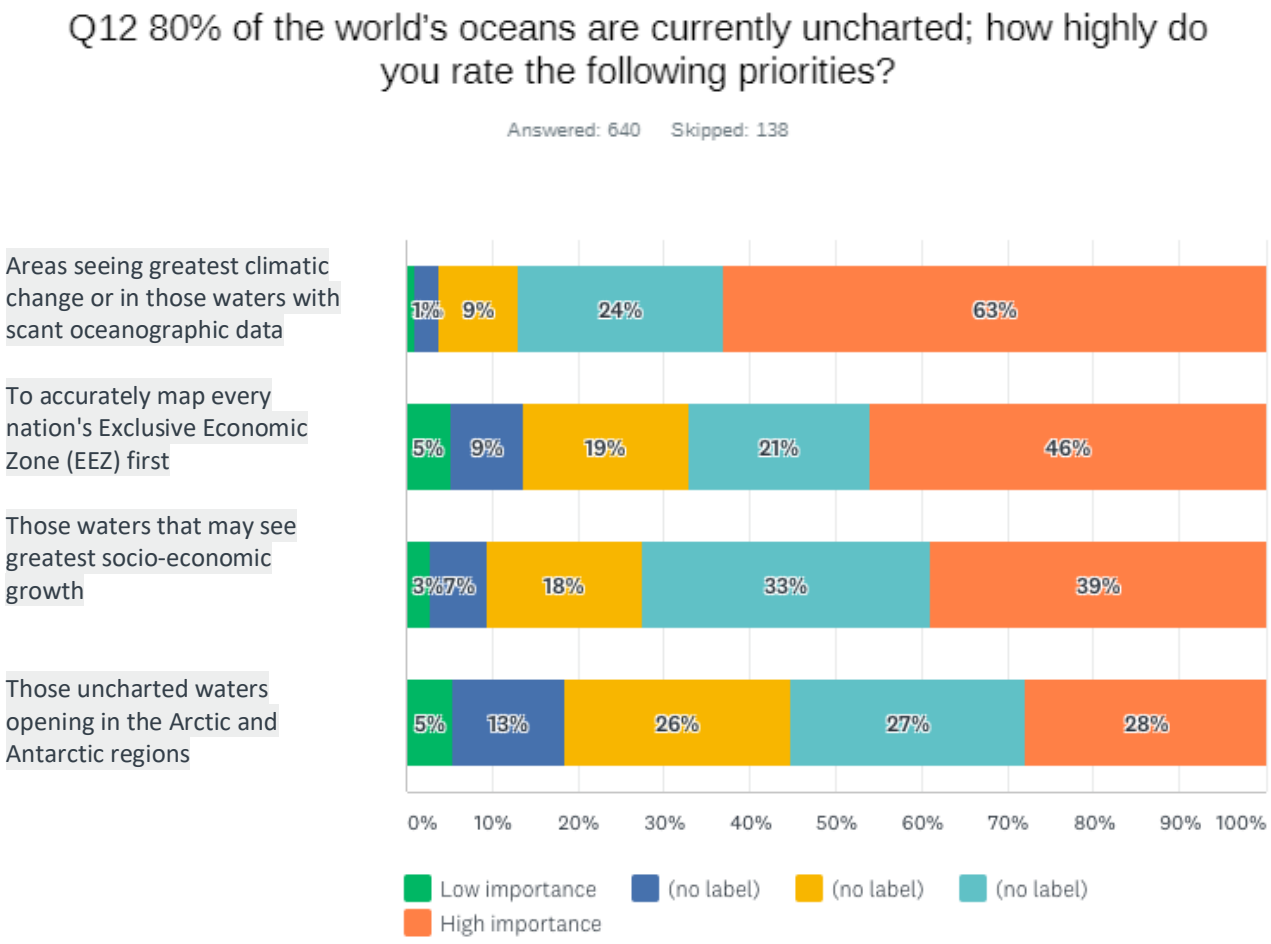
Answered: 707 Skipped: 71



Again, the results across first, second and combined surveys showed that a large majority of respondents have not previously considered the value of mapping the seabed from an environmental, social, or economic perspective.



By and large the results to this question were consistent. As a global priority list for seabed survey is developed it is strongly recommended that those views of respondents' who know of models are studied in detail as Seabed 2030 seeks to develop a global model.

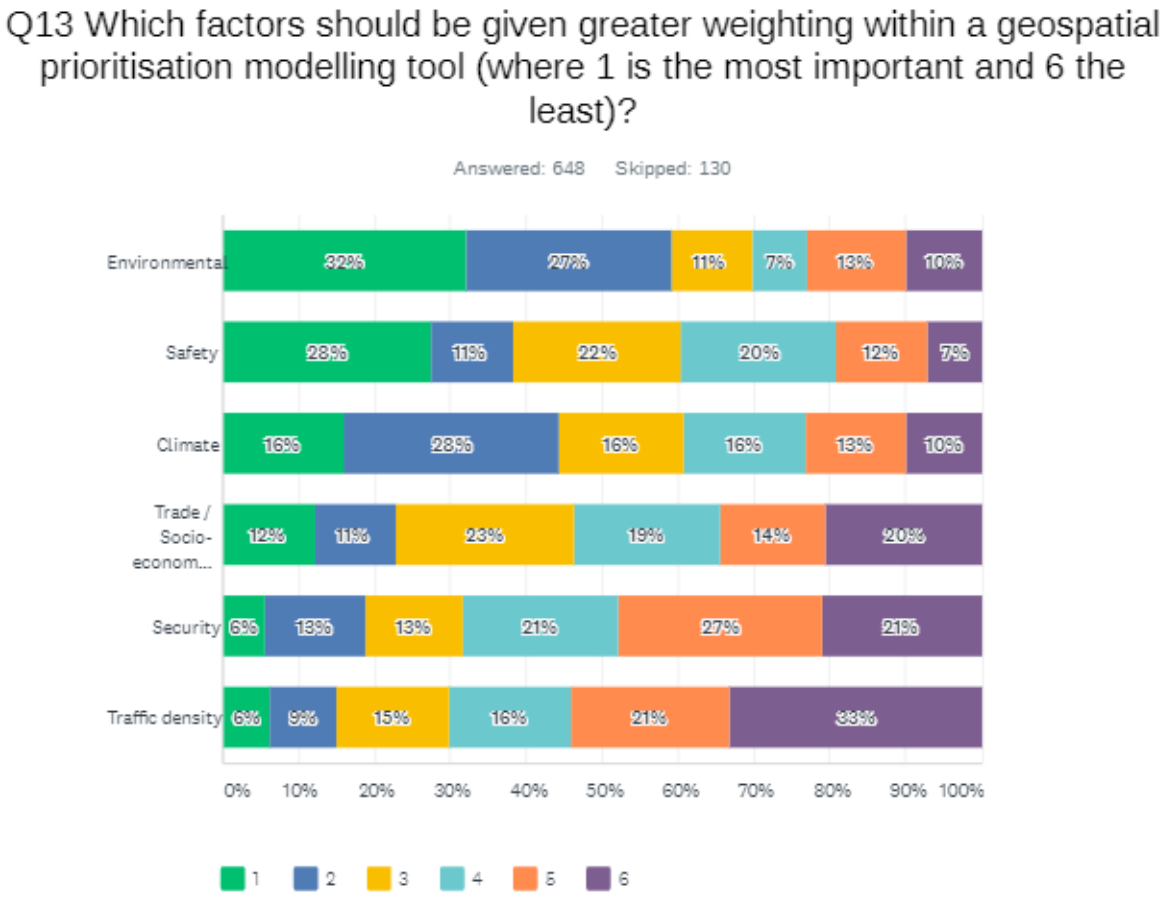


Aligned to Q8 and Q9, 63% of respondents see the highest priority for surveys in those areas seeing greatest climatic change and areas where little or no oceanographic data has been collected. Outside of

this, there is a significant view that nations should prioritise the mapping of their own EEZs. By means of example two views of responders on this question are as follows:

> *"Mapping areas of maximum socio-economic growth should be a priority as these maritime areas represent sea areas where human activity and competition for resources exerts maximum pressure on the marine and coastal ecosystems. Mapping will support better planning and decision making in this context. Mapping targets for individual nation states EEZ gives individual nations a clear seabed mapping goal, however the discrepancy in effort required to map shelf and shallow coastal waters vs, deep waters which may occur within a nations EEZ should always be taken into account as water depth will be a major factor in estimating the costs of these activities."*

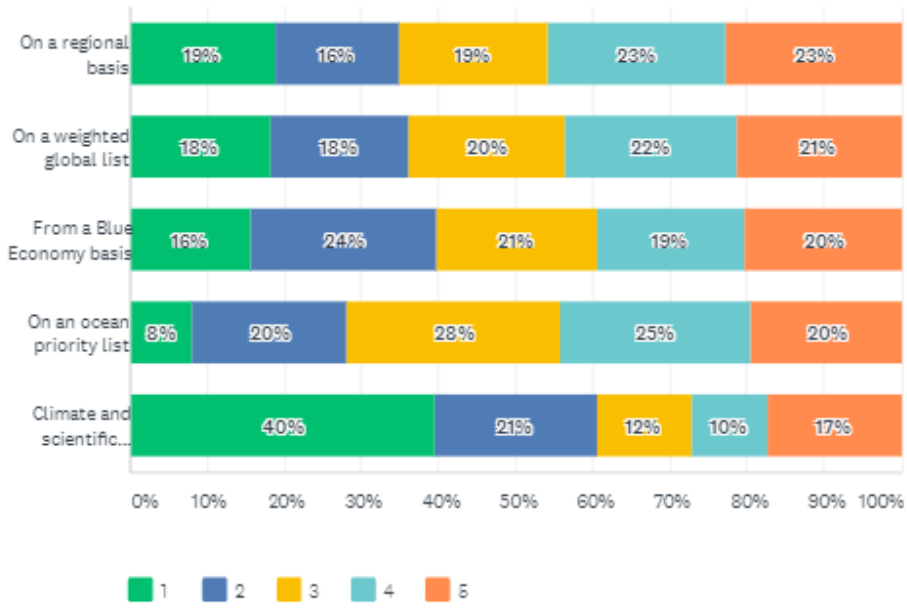
> *"Those island nations and developing coastal states that are most prone to effects of climate change and sea level rise are also often those with less wealth to mitigate. Long term planning backed by scientific evidence and linked to development banks investment should be considered a priority."*



The views of what sectors/aspects should be given greater weighting in a prioritisation model were consistent across survey 1, survey 2 and the combined survey. This consistency of evidence provides justification of both prioritisation and weighting when the global model is developed.

Q14 How should we prioritise marine geospatial surveys (where 1 is the most important and 5 the least)?

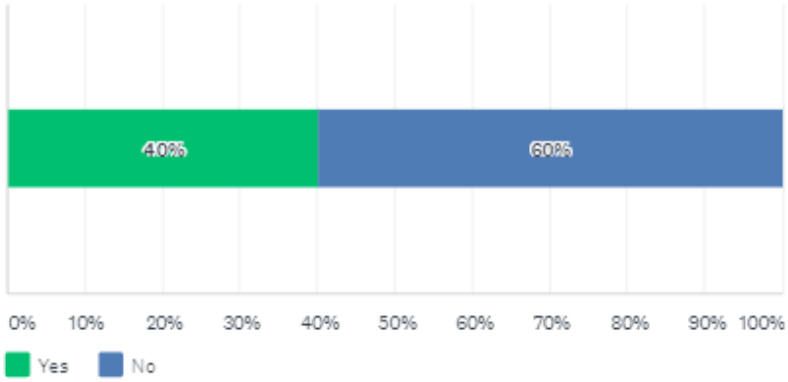
Answered: 632 Skipped: 146



Again, it can be seen across the surveys that when prioritising 40% say that climate change and scientific should take priority. There was also consistency on an equitable percentage level for global weighting, Blue Economy and regional and each of these need to be given equal weighting and priority in the Seabed 2030 survey model.

Q15 Are there any particular areas of the seabed that you are currently trying to get mapped?

Answered: 638 Skipped: 140



A consistency of percentage levels can be seen across the surveys and the specific details of each respondent can be found in the full results which are appendices to this report.

Q16 If you answered 'yes'...

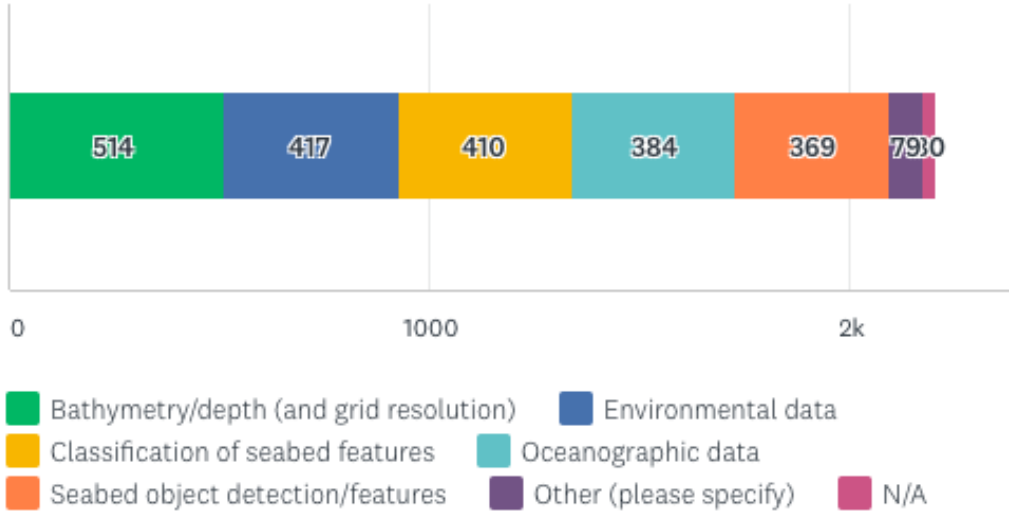
Answered: 256 Skipped: 522

ANSWER CHOICES	RESPONSES	
Have you applied for funding / resource to map this part of the seabed?	98%	251
Have you articulated the environmental, social or economic value of mapping this area of the seabed? If yes, please give details / links.	92%	236
Please share details of your area of interest	100%	255
Why do you want to map this part of the seabed?	99%	253

Individual details and responses to this question can be viewed in the full results document.

Q17 What marine geospatial information is needed by you? Please tick all that apply.

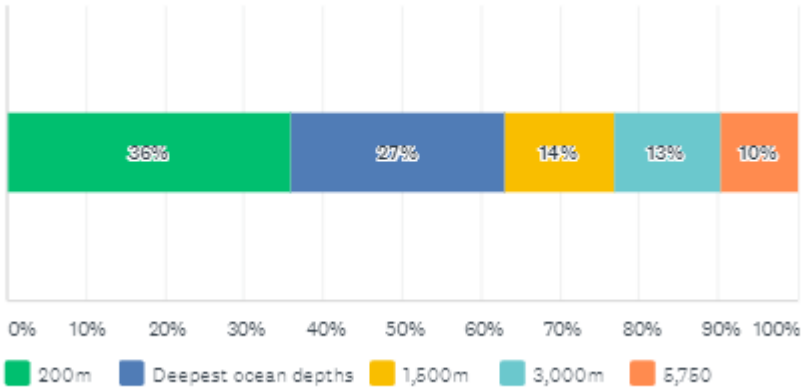
Answered: 617 Skipped: 161



Bathymetric data is the most sought-after data set, however the results consistently show that there is a significant and large demand for environmental data, oceanographic data and classification of seabed features. Should Seabed 2030 evolve then serious consideration should be given to widening the availability of other datasets.

Q18 To what depths do you require marine geospatial information?

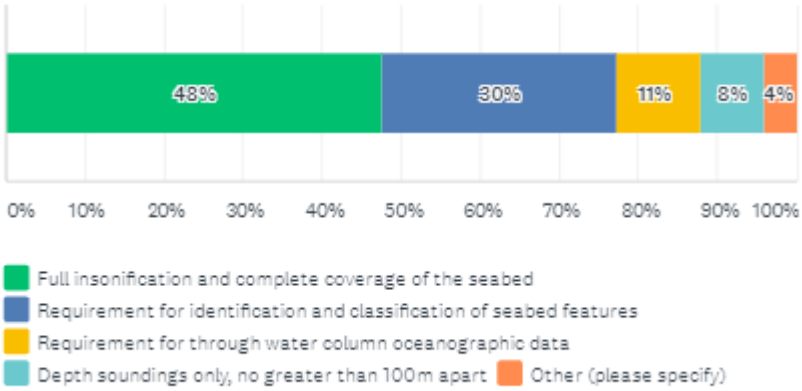
Answered: 598 Skipped: 180



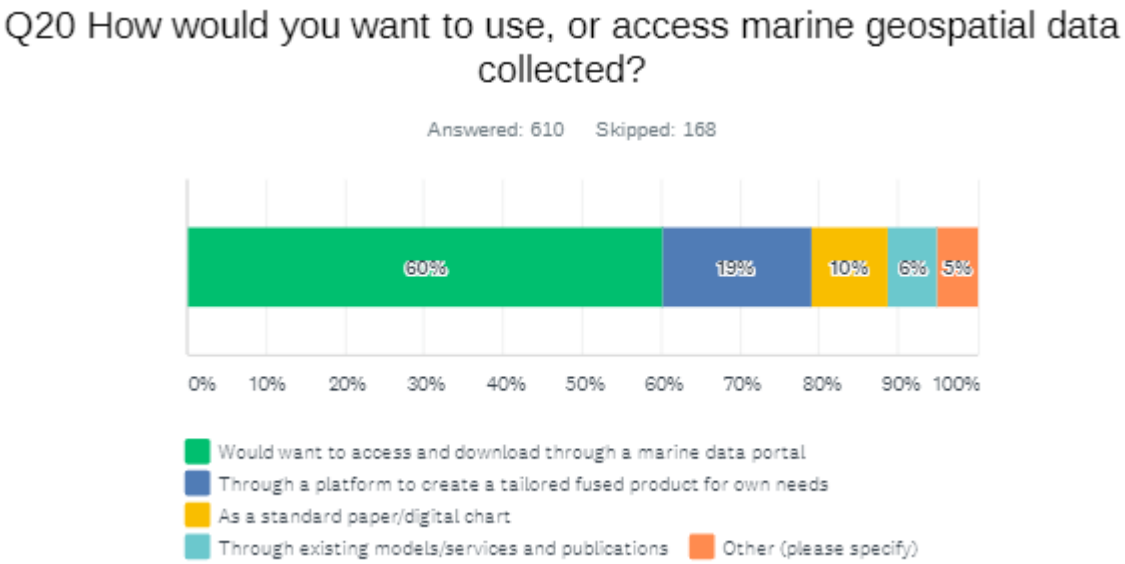
Consistency of percentage levels were seen across each of the surveys. Some 36% require data in the continental shelf depths down to 200m; the data collection technologies capable of surveying to this depth are numerous and differing collection methodologies can be used to collect this data. Whereas 27% require deepest ocean depth data which by its very nature is difficult to collect. The number of systems and technologies available are fewer in number and the cost to collect bathymetric data is significantly increased in comparison to shallow water depths.

Q19 What level of detail and density of geospatial data is needed?

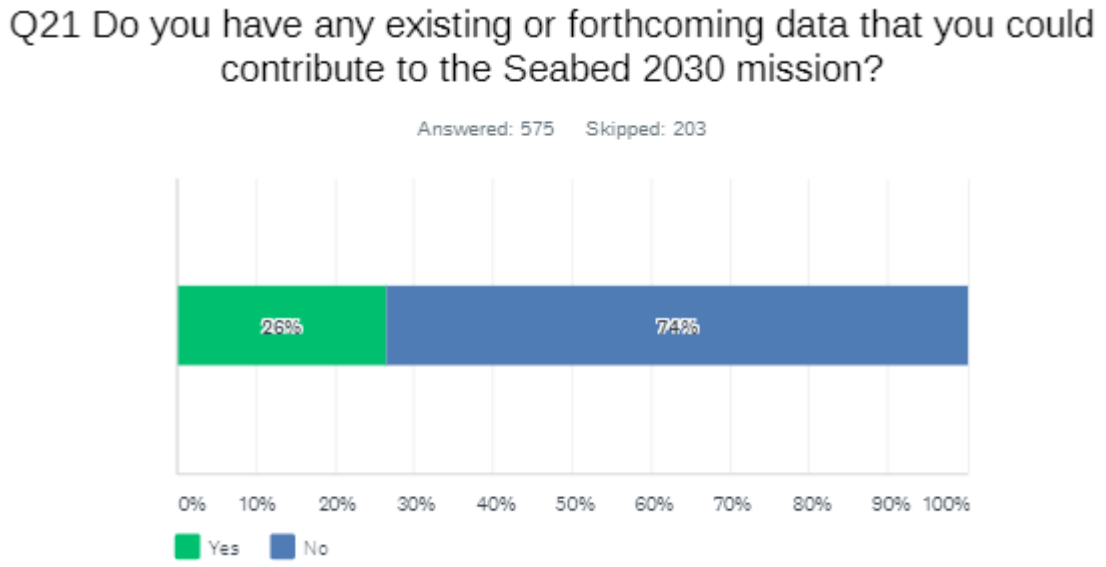
Answered: 602 Skipped: 176



The order of prioritisation and percentage levels for bathymetric data density were consistent across the surveys. Around 48% would want full insonification of the seabed. The reasons and justifications for needing full insonfication should be carefully reviewed in the detailed survey results. What is well known is that the cost associated for multibeam (full insonification) surveys is far greater than those of single beam surveys. This will be a significant factor and will have bearing when determining the funding requirements needed to map the remaining 80% of the world's oceans.



The surveys all showed similar percentage levels and the same order of priority for access to marine geospatial data. 60% want to be able to access the data via a portal and 19% would wish to be able to merge different layers/datasets to create their own tailored product.



A significant and key success of the online survey has been the ability to identify pre-existing bathymetric data that has been collected and identifying future bathymetric data planned to be collected by respondents' organisations/companies. Several of the respondents are already supporting and contributing to the Seabed 2030 project, however new bathymetric data sources have been identified in each survey phase.

Like the first survey, a separate report has been created showing where these data sources are located and listing the organisations who may be able to provide bathymetric data to Seabed 2030. For the second survey 59 respondents (some represented the same organisation (55 potential sources of data)) stated that they had access to data. This report will be submitted to the Regional Data Centres to approach those respondents in their area of responsibility.

Q22 Please list any other sources of information you think we should explore.

Answered: 189 Skipped: 589

The specific details and answers given by each respondent to this question can be found in the full results report.

Q23 Is there anything else you would like to add?

Answered: 243 Skipped: 535

The full reports list the detailed views of the respondents, and they should be reviewed and considered when developing the seabed mapping priority list. Below is a selection of some of the responses; what is abundantly apparent is the universal praise, support, and admiration for IHO, GEBCO, the Nippon Foundation and the Seabed 2030 project.

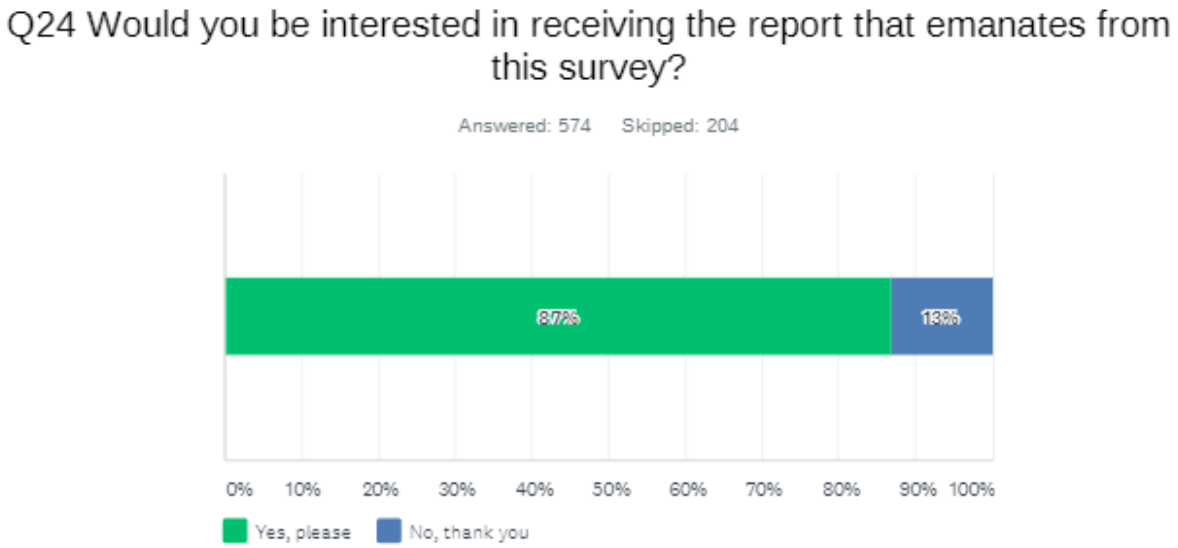
"All shipping should provide data from their navigation for a big ocean data base big data conundrum. Similarly, all tugboats operating in harbour area should be contributing to this big data repository of ports and harbours."

"I wish to congratulate you for the excellent initiative of this project that seeks global cooperation and that will have multiple environmental, social and economic benefits from mapping the seabed. Thank you and we will be waiting to support you with such a beautiful activity."

"I would love to be part of Seabed 2030. Hope my company can give some support to this."

"I believe that the strengthening between institutions in different parts of the world will help in the mapping, mainly in the interaction with universities that have low economic power."

"Acknowledge this great contribution and efforts to The Nippon Foundation and GEBCO and give all my support to the working team."



By and large most respondents would like to see the reports and findings generated from the surveys they contributed to. It is recommended that these are made available on the Seabed 2030 website for all to see.

Conclusions and Recommendations

The Seabed 2030 online surveys have been a complete success and the results obtained have far exceeded expectations. Some 65 countries contributed to the first survey and through a more focussed and targeted strategy this rose to 89 countries overall in the combined survey. In addition, those countries, and regions where there was little or no response in the first survey made significant contributions to the second survey. Overall, the combined survey results now provide a comprehensive evidence and dataset, which reflects a global view and perspective across each maritime sector. Seabed 2030 now has a substantiated international view on survey mapping needs and requirements, the likes of which have never been seen before. It is strongly recommended that this is acted upon and leveraged to the maximum extent.

It is recommended that a survey priority list be generated based upon the collective views of the respondents to the online survey, which should then be passed to the world's hydrographic offices and agencies to gather their views. From this, and for the first time a validated global survey priority list can be created. This will then enable the development of a global weighted model to be developed for mapping the world's oceans. It should be noted that this work forms the next stage of the Wind in the Sails project supporting Seabed 2030 and subject to funding approval. This work and activity will take place between October 2021 and March 2022.

A combination of the evidence from the online surveys along with a prioritised list and global model will provide a great deal of the information set needed to create the business cases for funding institutions to secure the necessary financial investment to map the uncharted seabed.

It is recommended that the stand-alone data report generated from the second online survey for potential sources of crowd sourced bathymetric data to contribute to Seabed 2030 be actively progressed.

The detailed individual comments provided by the respondents to the online surveys should be reviewed in detail, these would provide valuable underpinning evidence and would contribute significantly to the development of a survey mapping priority list.