

Citizens and the Sea



Public perceptions of Oceans and Human Health:
A 14-country pan-European citizen survey

A SOPHIE Project Report



**Seas, Oceans & Public
Health in Europe**
Linking oceans and health research

Citizens and the Sea

Public perceptions of Oceans and Human Health: A 14-country pan-European citizen survey

This report was produced by Seascope Belgium in collaboration with the University of Exeter and the National University of Ireland, Galway.

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Juvenile European Herring Gull, Belgium

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The SOPHIE project

Whilst the ocean can benefit human health and boost wellbeing via activities like recreation and relaxation, it can also pose risks to human health – through factors such as flooding and pollution. This complex mix of threats and opportunities interact in ways we do not always fully understand. As a maritime continent, conducting research in this area is important for Europe, its inhabitants and its ocean.

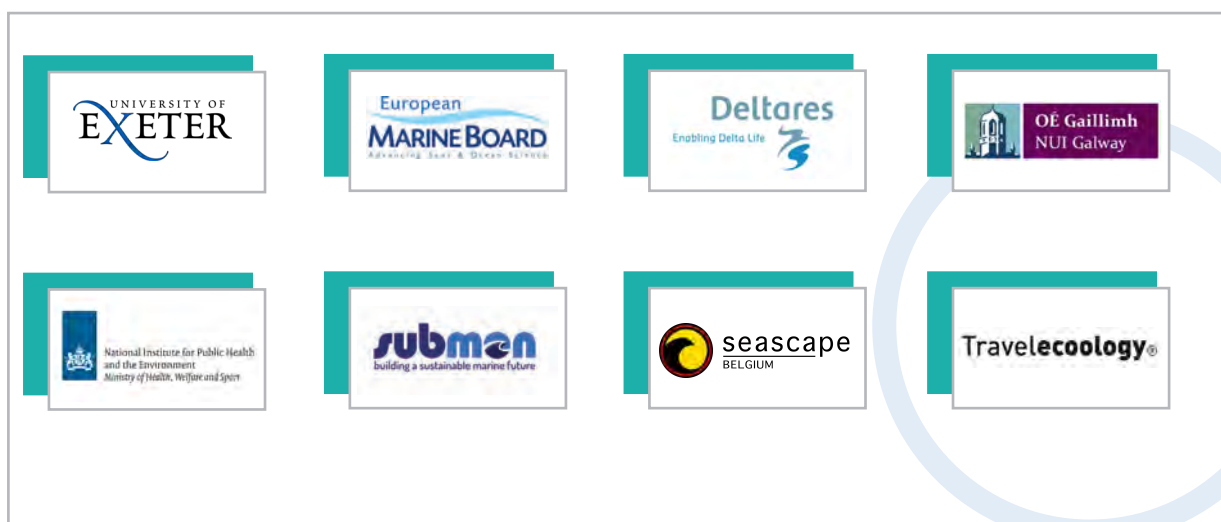
Seas, Oceans and Public Health in Europe (SOPHIE), a pan-European project, was funded by the European Union's Horizon 2020 programme. It brought together different groups (e.g. marine scientists, medical and social scientists, experts from the public health, marine tourism and other fields) and created a platform for these communities to work together to explore the complex interactions between the marine environment and human health and wellbeing.

The project produced a range of resources, exploring the links between Oceans and Human Health, and gathered information from: European citizens; our policy frameworks; marine and public health data holdings; the research literature; stakeholders; innovative solutions; citizen science and marine tourism.

Ultimately SOPHIE produced a Strategic Research Agenda – a roadmap which sets out the priorities for Oceans and Human Health research over the coming decade.

The SOPHIE project is being led by the University of Exeter.

- For more information: sophie2020@exeter.ac.uk
- Visit the SOPHIE website: <https://sophie2020.eu/>
- Join the conversation: <https://sophie2020.eu/activities/community-platform/>
- Read the Strategic Research Agenda: <https://sophie2020.eu/strategic-research-agenda/>





1

About this report

The SOPHIE survey – a novel, large-scale, pan-European survey on Oceans and Human Health – was developed with the aim of understanding public perceptions of the risks and benefits of marine ecosystems for human health and wellbeing.

This report provides a summary of the opinions expressed by 14,167 European citizens, from 14 countries, about their interactions with marine environments, their perceptions about a range of marine activities in relation to public health and wellbeing, the health of the marine environment and the economy, as well as their concerns and priorities related to the marine environment and public health and wellbeing. Data were collected by the international market research company YouGov using representative online panels in each country.

The findings reported here represent the headline findings from the preliminary analyses of the responses. More detailed analyses and results, including the individual determinants of preferences of health-related policy intervention in marine-related activities and concern for marine threats, will be reported by SOPHIE partners in a series of forthcoming peer-reviewed papers and publications.

A snapshot of key findings

- What's good for the environment is good for public health:** When asked to consider a range of marine activities in terms of the economy, the environment and public health, the same activities that respondents perceived as being good for the environment (conservation activities, community events, coastal protection) were also those that they felt were good for public health, and vice versa, those activities they perceived as bad for the environment, were also those that they perceived as bad (or least beneficial) for public health.
- Pollution is the citizens' biggest concern:** In terms of threats/risks posed by the marine environment to public health and wellbeing, respondents were most concerned about plastic pollution of marine waters, closely followed by chemical/oil pollution. They were also very supportive of funding research into marine plastic pollution.
- Protecting the marine environment is the most important marine policy goal:** When asked to consider three marine goals, namely, promoting economic growth, protecting the marine environment and protecting public health/wellbeing from the marine environment, the public rated 'protecting the marine environment' as the most important goal to them. When asked to consider the same three goals from the perspective of a policy maker, a similar pattern emerged, however respondents felt that policy makers would place more importance on economic growth than they themselves would.
- Protect marine biodiversity to protect public health and wellbeing:** After pollution, loss of marine species was the area respondents were most concerned about in terms of the implications for public health and wellbeing. Respondents also felt that conservation activities were good for the environment, public health and wellbeing and the economy. Further research to protect marine biodiversity was seen as the most important area in terms of future funding to better understand public health and wellbeing implications.
- More policy intervention for seabed mining activities:** Out of 14 marine activities, deep-sea mineral extraction (mining) and offshore oil/ gas mining were perceived as the most harmful for both the environment and public health and wellbeing. Consequently, respondents expressed a desire for more policy intervention to protect public health and wellbeing from these mining activities.
- Citizens priorities are to protect the marine environment:** When invited to supply their own unprompted key priorities for protecting both public health and wellbeing and the health of the marine environment, priority statements relating to the 'protection of the marine environment' and 'preventing pollution' were some of the most frequently cited. Further analyses of a random sample of 700 survey responses and the use of a Collective Intelligence methodology at a citizen workshop identified 'stronger legislation and regulation of marine industrial activities' as the top voted priority category by citizens.



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Why did we do a survey on Oceans and Human Health?

Bordering four seas, two ocean basins, with 70,000 km of coastline and more than half of its population living within 50 km of the sea, as well as having the largest exclusive economic zone¹ in the world, the EU is truly a maritime region².

Europe's 'blue' economy supports more than 4 million jobs and generated turnover of €684 billion within the EU in 2017³. European citizens rely on the marine environment and marine resources for jobs, transport, food, recreation and much more. As we move towards becoming a climate neutral Europe by 2050, we will rely more on our marine environment and its resources to provide us with sustainable sources of food and energy. Our seas and oceans have enormous potential, but they are already under enormous pressures; from over exploitation, pollution and climate change. If we are to continue to grow our marine economy, reduce greenhouse gas emissions and protect and conserve our marine environment, trade-offs will have to be made with conflicting needs for space and resources.

1 The exclusive economic zone is the zone where coastal nations have jurisdiction over natural resources.
<https://www.un.org/Depts/los/index.htm>

2 <https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/europes-seas-and-coasts>

3 European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

While there is a substantial body of literature and evidence to support policy and decision making on marine environmental and marine economy issues, **until now, there has been little research into the interactions that European citizens have with marine environments and the implications these interactions have for their own health and the health of the marine environment.**

The SOPHIE survey – a novel large-scale, pan-European survey on Oceans and Human Health – was developed with the aim of understanding public perceptions of the risks and benefits of marine ecosystems for human health and wellbeing.

The survey collected information about the respondents to assess their contact with the marine environment. It examined a range of marine activities such as fishing, aquaculture, oil and gas extraction, marine renewable energy, tourism and coastal management, to shed light on the public perceptions of the potential impacts of these activities on their health and wellbeing, on the economy and on the marine environment, and where they felt there was a need for more policy intervention to protect human health and wellbeing. Finally, it examined how respondents felt about various marine risks and threats in terms of the impacts to their health and wellbeing, where they considered more research was needed, and what their priorities were for protecting both public health and wellbeing and the health of the marine environment.

This information will help us to understand the beliefs and perceptions in different groups and cultures across Europe, at least at the time the survey was carried out (Spring 2019).

The responses from the survey will help inform policy makers about the aspirations and fears of the public, and, in turn, may provide information to help decision makers balance the needs of economic development, environmental protection, and public health and wellbeing.

This survey is one of several integrated tasks within the SOPHIE project, which helped to establish baseline information about the interlinkages between our seas, oceans and human health. As well as the survey, SOPHIE gathered information on Oceans and Human Health interactions in Europe from a range of sources including: stakeholder workshops and conversations, data repositories, the policy landscape relevant to Oceans and Human Health, scientific studies and the general public. The project identified innovative solutions and best practices in Oceans and Human Health and explored future scenarios⁴. It also piloted citizen science actions through marine tourism, and created and mobilised a European 'Oceans and Human Health' network of experts and stakeholders⁵.

These actions have already fed into a Strategic Research Agenda⁶, developed by experts and aimed at guiding the future of Oceans and Human Health research in Europe. Moving forward it will also mobilise an emerging European research effort with international partners and projects. In this way, SOPHIE will leave a legacy that will advance the field of Oceans and Human Health across the world, well beyond the lifetime of the project.

⁴ All SOPHIE project outputs can be accessed from <https://sophie2020.eu/resources/>

⁵ <https://sophie2020.eu/activities/community-platform/>

⁶ <https://sophie2020.eu/strategic-research-agenda/>



3

How did we do it?

The SOPHIE survey⁷ was created through a collaborative process led by the University of Exeter Medical School, UK, together with Seascope Belgium and the National University of Ireland, Galway. Many of the questions were based on established validated questions from a number of pre-existing European health and environmental questionnaires (e.g. European Social Survey⁸).

The survey questionnaire comprised four basic sections:

- a) Exposure (including recreational and occupational contact with the marine environment);
- b) Perceptions of marine activities – and the trade-offs between economic, environmental and health and wellbeing outcomes;
- c) Concerns and priorities and policy interventions around various marine threats for human health; and wellbeing
- d) Sociodemographic information to explore how perceptions of Oceans and Human Health differs between groups.

With the exception of one free text question at the end of the survey, all questions were close-ended with multiple response options.

The final version of the survey was reviewed during a workshop by a group of engaged public citizens, the Health and Environment Public Engagement Group (HEPE)⁹, based at the European Centre for Environment and Human Health (University of Exeter). HEPE were tasked with making suggestions on how the survey could be improved with regards to its language and structure, to ensure widespread citizen understanding. Following their feedback, adaptations were made accordingly. The survey was subjected to an ethical review and has been approved by the University of Exeter Medical School Ethics Committee.

Following a rigorous tendering procedure, the international polling company YouGov were selected to carry out the survey on behalf of the SOPHIE partners in 14 countries.

The survey was designed in 2018, data were collected in early 2019, and data analyses were carried out by the University of Exeter and NUIG from late Summer 2019 onwards. All data collection and processing was in compliance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR).



Port of Hamburg, Germany

⁹ <https://www.ecehh.org/about-us/engagement/>



4 Who and where did we survey?

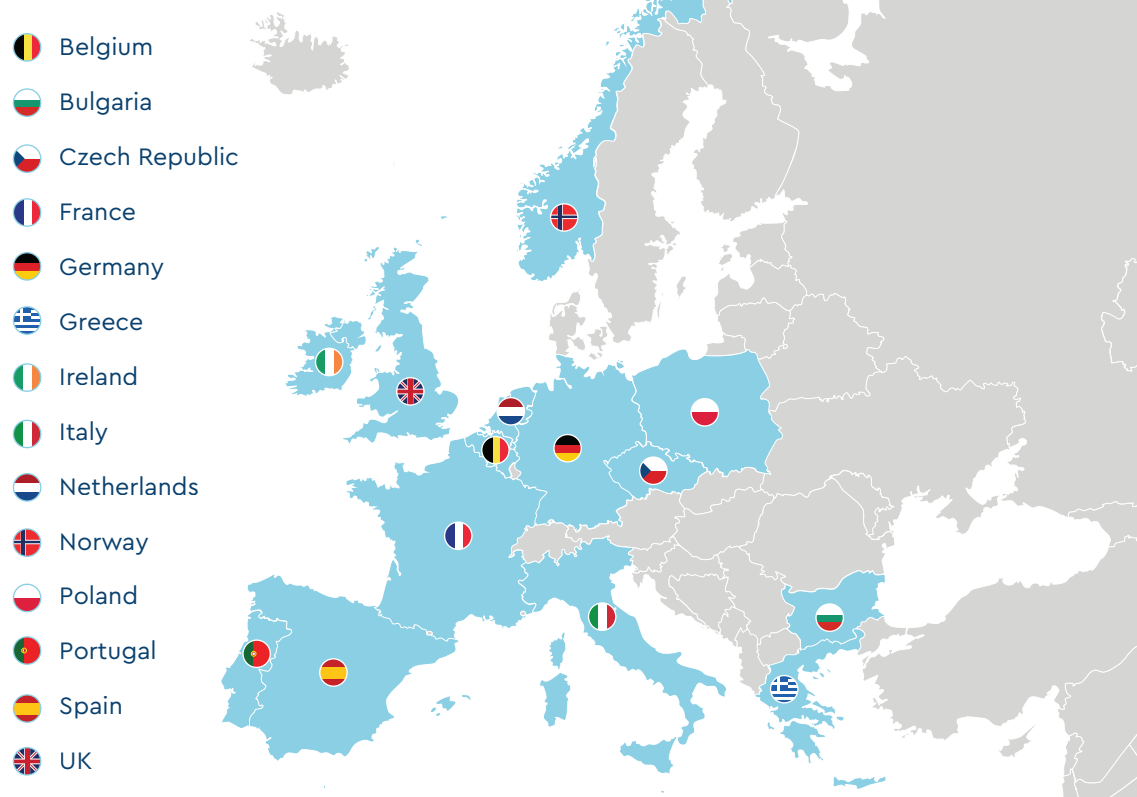
The SOPHIE survey sampled ~1,000 respondents from each of the 14 countries selected: Belgium, Bulgaria, Czech Republic, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain and the UK. The survey was administered in multiple languages, but the format, presentation and content were identical among all 14 countries sampled (except for information on income and regions which differed between countries).

A total of 14,167 online respondents took part in the SOPHIE survey. These were nationally representative samples of online respondents from each of the 14 European countries sampled, in accordance with key socio-demographics such as gender, age and region.

Several factors were taken into account when selecting which countries to survey. These included choosing countries with proximity to each of Europe's six sea-basins, *i.e.* the Arctic, Atlantic, Baltic Sea, Black Sea, Mediterranean Sea and North Sea, obtaining a reasonable geographical spread, therefore include northern, southern, eastern and western European countries; and ensuring that countries with differing coastline lengths were included, with one land-locked country deliberately included (Czech Republic). SOPHIE partner countries were all included (Belgium, Ireland, the Netherlands, Spain, and the UK), to link to other ongoing SOPHIE project work in those areas. Although not an EU¹⁰ country, Norway was included as an important European maritime country, and also due to its proximity to the Arctic ocean and its extensive coastline.

¹⁰ The UK was still a member of the EU at the time the SOPHIE survey was carried out. So for the purposes of this study and its finding, the UK is considered as an EU country.

Map of Countries Included in Survey



Survey Respondents

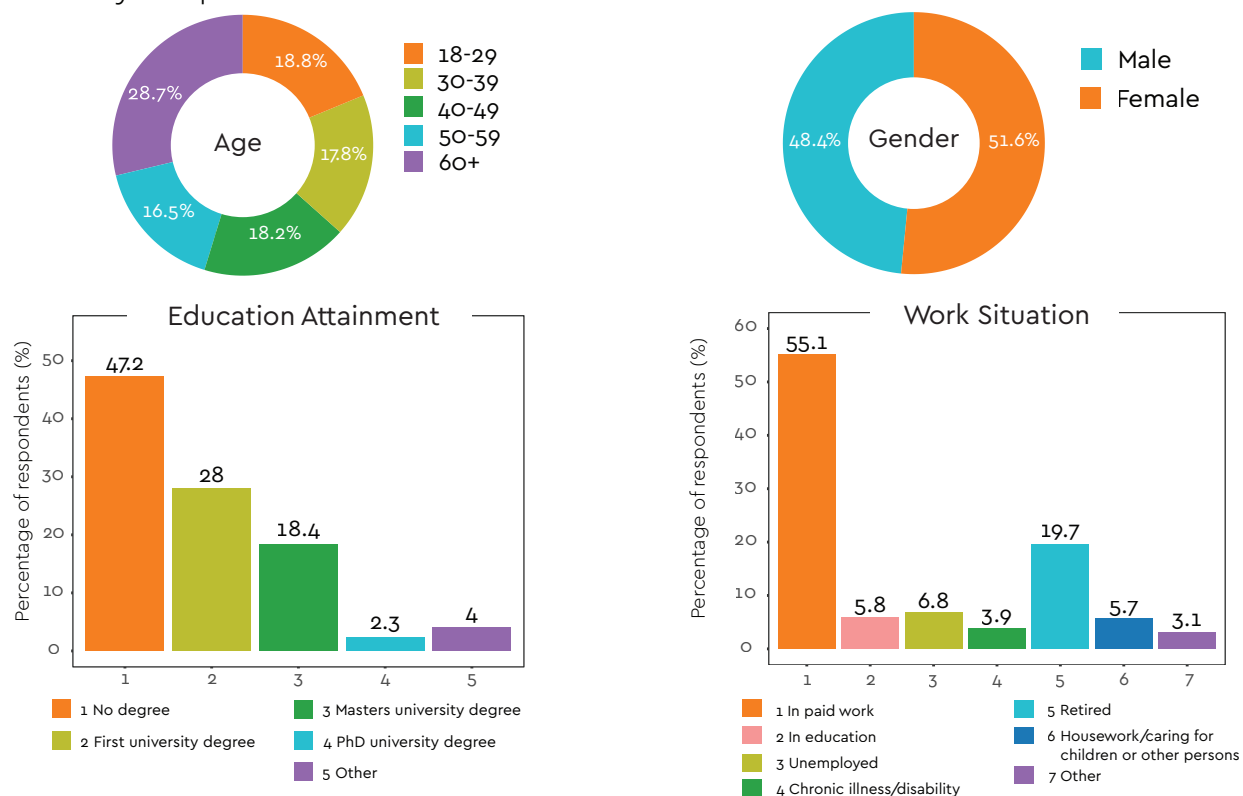


Figure 4-1



5 What did people say?



Nice, France

5.1 Exposure

This section dealt with the public's exposure to the marine environment: where they lived in relation to the coast, how often they visited the coast, whether they or a member of their household worked in a marine sector and what recreational activities they did when they visited the sea.

Table 1. A summary of some of the main national marine related characteristics of the sampled countries.

Country	Length of the coastline (km) ^a	Ratio: coastline (km) / area (km ²) ^b (to nearest km)	Share (%) of population in coastal regions compared to national population (data 2019) ^c	Blue economy (% of national GVA ^d) in 2017 ^e	Blue Economy (% of national jobs) in 2017 ^f	Main established Blue Economy sectors as identified in the Blue Economy Report (data 2017) ^g	Main Blue Economic activities as identified by the respondents ^h
Belgium	66	463	32	0.9	0.6	Port activities Marine living resources Coastal tourism	Other Tourism Shipping
Bulgaria	354	314	14	1.6	2.4	Coastal tourism Marine living resources Shipbuilding and repair	Tourism Cruise Shipping
Czech Republic	-	-	-	0.2	0.2	Port activities Marine living resources Marine non-living resources	Tourism Cruise Shipping
France	13,777	46	38	1.0	1.4	Coastal tourism Marine living resources Port activities	Other Cruise Shipping
Germany	2,389	150	9	0.8	1.0	Coastal tourism Port activities Marine living resources	Other Shipping Tourism
Greece	20,816	6	94	3.8	9.4	Coastal tourism Marine living resources Maritime transport	Tourism Shipping Cruise
Ireland	1,448	48	94	0.8	2.2	Coastal tourism Marine living resources Port activities	Tourism Shipping Renewable energy/ Research
Italy	7,600	40	60	1.3	1.8	Coastal tourism Marine living resources Maritime transport	Tourism Other Coastal management / environmental protection
Netherlands	451	92	54	1.6	1.5	Coastal tourism Port activities Maritime transport	Other Tourism Shipping / Cruise

Country	Length of the coastline (km) [^]	Ratio: coastline (km) / area (km ²) [§] (to nearest km)	Share (%) of population in coastal regions compared to national population (data 2019) [@]	Blue economy (% of national GVA*) in 2017 [§]	Blue Economy (% of national jobs) in 2017 [§]	Main established Blue Economy sectors as identified in the Blue Economy Report (data 2017) [§]	Main Blue Economic activities as identified by the respondents [~]
Norway	100,915	4	--	--	--	Offshore energy Maritime transportation Seafood	Traditional marine energy Other Shipping
Poland	500	625	12	0.8	1.0	Coastal tourism Marine living resources Port activities	Shipping Tourism Coastal management / commercial fishing
Portugal	1,793	51	83	2.4	4.0	Coastal tourism Marine living resources Port activities	Other Tourism Commercial fishing
Spain	5,849	87	60	2.5	4.1	Coastal tourism Marine living resources Port activities	Tourism Other Commercial fishing
UK	6,028	41	77	1.7	1.7	Coastal tourism Port activities Shipbuilding and repair	Other Traditional marine energy Environmental protection / coastal management

[^] Source: https://www.emodnet-bathymetry.eu/media/emodnet_bathymetry/org/documents/emodnet_bathymetry_national_coastline_and_baseline_collection_report_20190124.pdf

Source for Poland: <https://link.springer.com/article/10.1007/s11069-016-2619-z>

[§] EU countries: Eurostat - Area by NUTS 3 region (dataset demo_r_d3area; data 2014);

Norway: Mapping Authority of Norway

<https://www.kartverket.no/Kunnskap/Fakta-om-Norge/Arealstatistikk/Arealstatistikk-Norge/>

[@] Source: Eurostat – Population on 1 January by broad age group, sex and NUTS 3 region (dataset demo_r_pjanaggr3; data 2019)

* GVA: value added at factor costs

[§] Source: European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

[~] To note that the definitions of the sectors in the Blue Economy Report (2019) do not necessarily align with the definitions of the sectors and/or activities mentioned in the survey.

- Landlocked nation

-- Comparable data not available

Q: Approximately how far do you live from the coast?

For the majority of countries surveyed, more than 50% of respondents lived more than 20 km from the coast. Exceptions to this were Greece, Ireland, Norway and Portugal, where between 61% and 79% of their populations lived within 20 km from the coast. In the case of both Norway and Greece, more than 50% of respondents lived within 5 km of the coast, which could be explained by the fact that both countries have extensive coastlines in relation to their land area (Table 1). With the exception of the landlocked Czech Republic, Germany showed the lowest number of respondents (5.3%) living within 20 km of the coast.

More than 10% of the respondents in Greece, Ireland, Italy, Norway, Portugal, Spain and the UK lived within 1 km of the coast. Table 1 shows these same countries to have the highest share of their population living in coastal regions, compared to the national population (with the exception of Norway for which comparable data was not available¹¹).



Norheimsund, Norway

¹¹ European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

Approximately how far do you live from the coast?

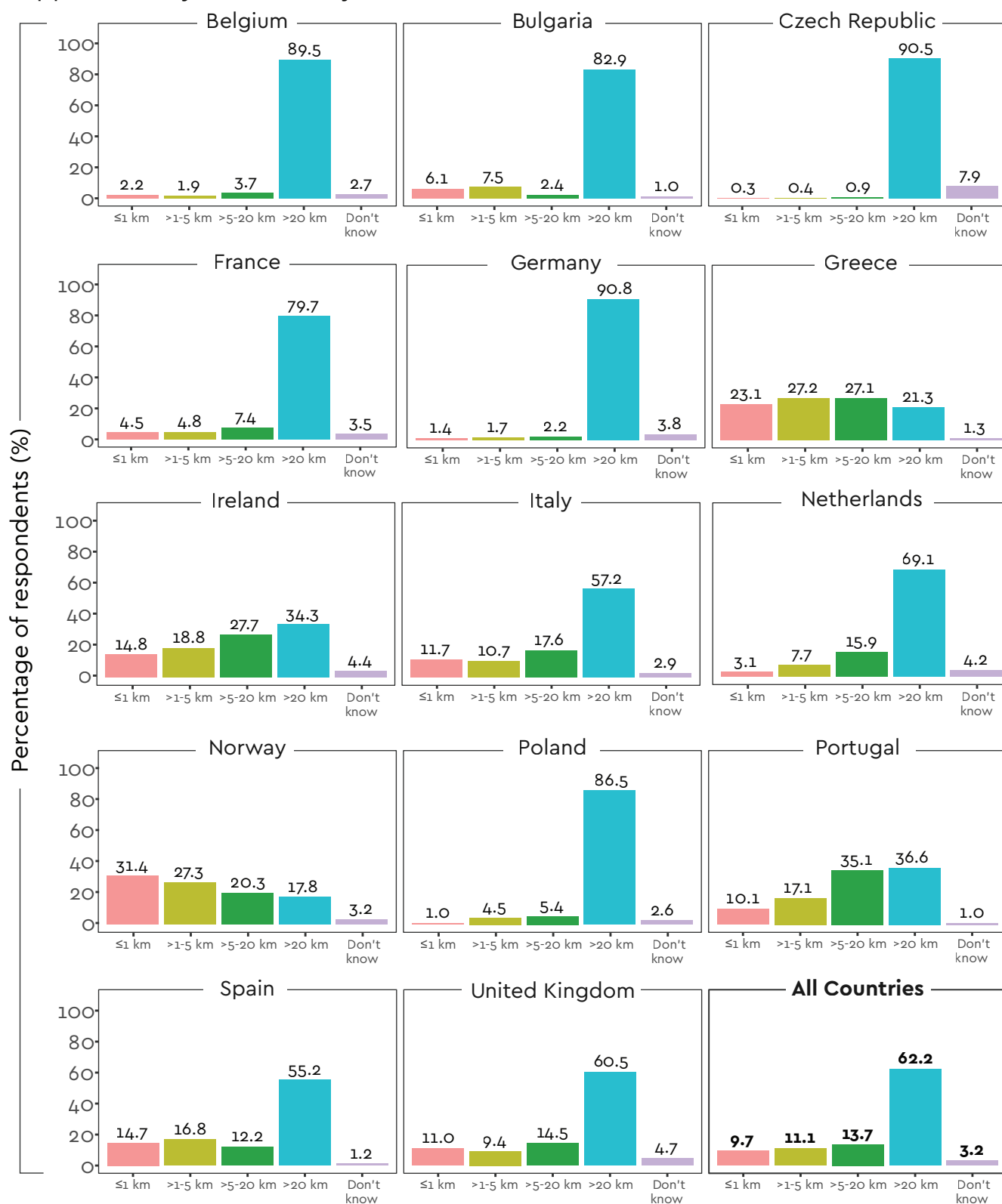


Figure 5-1

Q: Please indicate whether you or any member of your household works in any of the following professions/industries associated with the marine environment.

In answer to the question on whether the respondent, or any member of their household, worked in one of a range of specified marine sectors, 14% of all respondents answered positively. Of these respondents, the sector most frequently identified across all countries was 'coastal tourism/recreation' (3.12%). Considering the country profiles, this was most marked for Bulgaria (10.2%) and Greece (7%). Overall, 'coastal tourism/recreation' was the sector indicated most frequently by seven of the 14 countries surveyed, including Bulgaria, Greece, Ireland, Italy, Spain, and interestingly also by the landlocked Czech Republic. This figure rises to nine if we include those countries where 'other' was the highest sector, since arguably 'other' would include more than one sector (Belgium, Netherlands, and Portugal). 'Shipping' was the sector indicated most frequently by respondents from Poland (5.5%), with 'coastal tourism/recreation' coming second with 4% of respondents. 'Shipping' also featured as the second most important sector for respondents from Greece. In the case of Norway and the UK, the single sector indicated most frequently by respondents (excluding other) was 'traditional marine energy' (2.8% and 0.7% respectively), which could encompass the oil and gas sectors.

These results are consistent with the findings of a recent report¹² by the European Commission's Directorate-General for Maritime Affairs and Fisheries with the Joint Research Centre, analysing the scope and size of the EU's blue economy. Of six 'established' blue economy sectors (coastal tourism, marine living resources, marine non-living resources, ports and water projects, shipbuilding and repair, and maritime transport), coastal tourism accounted for 54% of the jobs, with 2.2 million people directly employed in the sector for the total EU blue economy in 2017. The SOPHIE survey results are also in line with the country profiles available in the report (Table 1), indicating that the main blue economic sector in most countries listed is coastal tourism, together with port activities and marine living resources (e.g. fisheries). This consistency gives us confidence in the robustness and representativeness of our data.



Port of Gdańsk, Poland

¹² European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

Which marine sector do you or a member of your household work in?

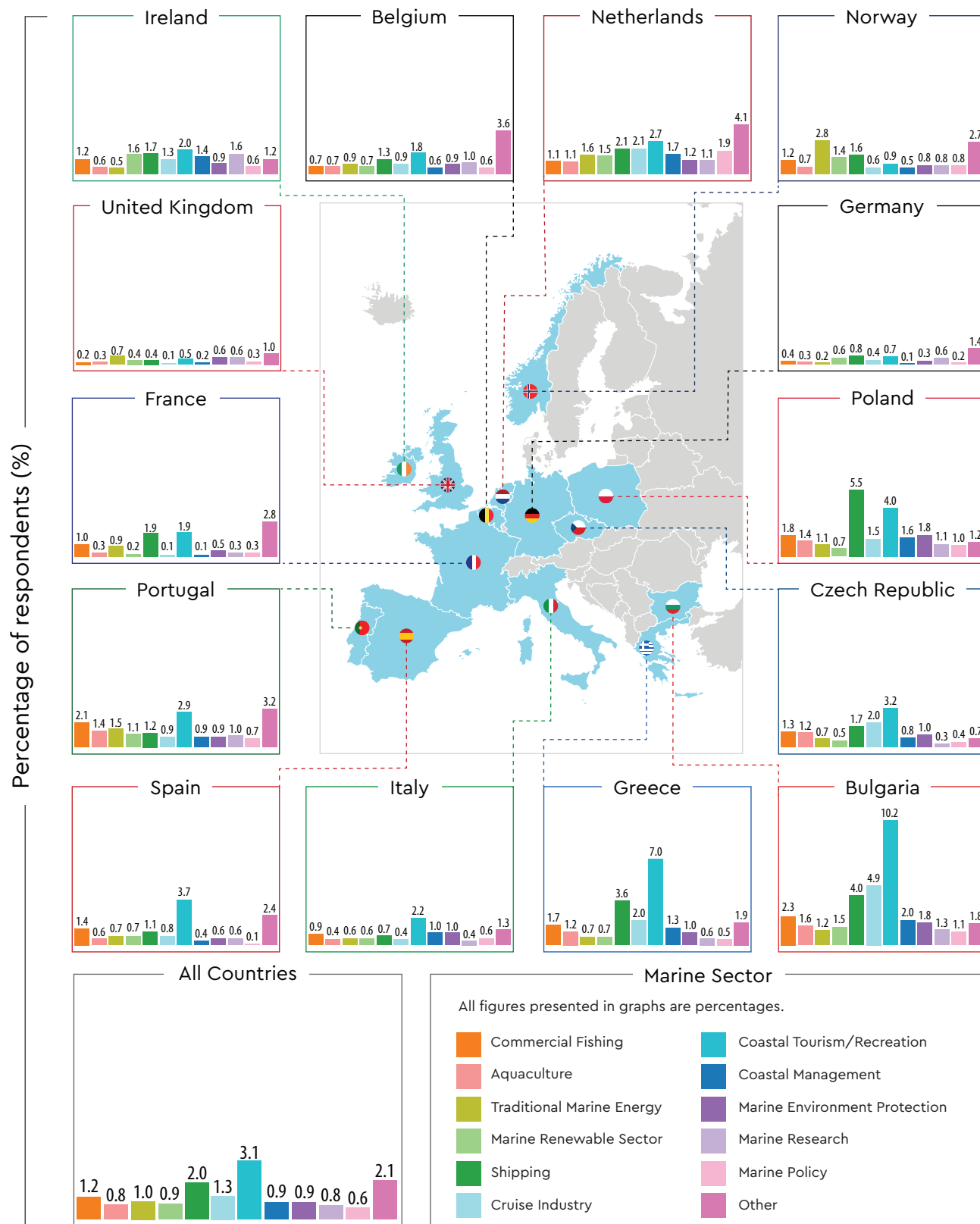


Figure 5-2

Q: Thinking now about the last 12 months in particular, which of these statements best describes how often, if ever, you visit the coast or the sea?

When asked how often they visited the coast, approximately 54% of respondents stated that they did so only a few times per year. Considering country profiles, those countries where 50% or more of the respondents visited the coast only a few times per year also showed fewer than 10% of respondents living within 1 km of the coast: Belgium, Bulgaria, Czech Republic, France, Germany, Netherlands and Poland. **The exception to this was the UK, where more than 10% of respondents lived within 1 km of the coast; yet 63.7% of respondents said they did not visit the coast more than a few times per year.**

Respondents from Greece visited the coast most frequently with 46.7% indicating that they visited the coast at least once a week. After Greece, Portugal, Norway, Italy, Spain and Ireland showed the highest number of respondents visiting the coast at least a few times per month (at least 24%) or once a week or more (at least 40%).

A large proportion of German respondents never visited the coast (29.5%), almost as many as the landlocked Czech Republic (30.6%). This may reflect the fact that the German sample also indicated that more than 90% lived further than 20 km from the coast. Table 1 also shows that the share of the population living in coastal regions in Germany, compared to the national population, is quite low (9%).

It is also worth noting that people were not asked to specify whether they visited the coast in their own country, so it is not possible to say whether these responses indicated visits to their own coast, or visits to coasts in other countries.



Nazaré beach, Portugal

How often do you visit the coast?

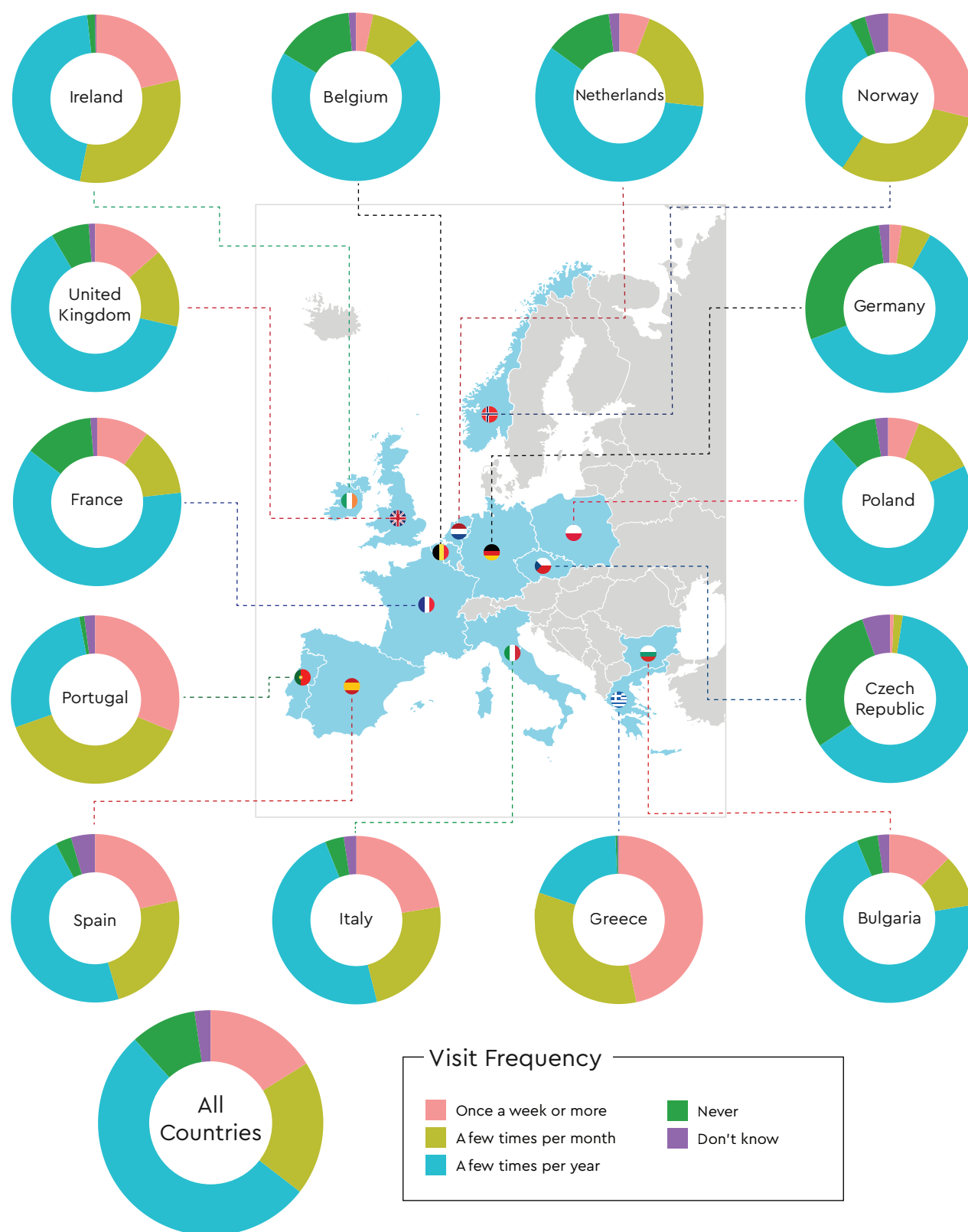


Figure 5-3

Q: Which of the following recreational activities, if any, do you engage in that are related with the sea or coast?

'Watching the view', 'sunbathing/picnics' and 'beach/coastal walking' ranked as the three most common sea and coast related recreational activities that respondents engaged in. This was reflected in the responses at country level, with 12 of the 14 countries ranking these three activities in their top three. The exceptions were Greece and the Czech Republic, where 'swimming' was chosen as one of the top three activities by 84.5% and 68.7% of respondents, respectively.

More than 45% of respondents across all countries indicated 'eating seafood' as an activity they engaged in that was related to the sea or coast. This was particularly high for Bulgaria (63.9%), Greece (58.8%) and Spain (56.5%). Ireland showed the lowest number of respondents choosing 'eating seafood' (31.4%), perhaps surprising given its island status.

Those recreational activities that could be done relatively easily *i.e.*, without specialist equipment, training or significant cost (e.g. 'watching the view', 'sunbathing/picnics', 'beach/coastal walks'), were undertaken more frequently across all countries compared to activities such as 'sailing', 'kayaking', 'surfing', 'boating', etc. **The only distinction here was for Norway, where almost 40% of respondents participated in 'seafishing', almost as many as 'eating seafood' and higher than 'swimming'.**

The EU Blue Economy Report (2019) defined coastal tourism as covering *'beach-based tourism and recreational activities, e.g. swimming, sunbathing, and other activities for which the proximity of the sea is an advantage, such as coastal walks and wildlife watching'* and maritime tourism as *'water-based activities and nautical sports, such as sailing, scuba diving and cruising'*. The citizen data in this report support this distinction between 'coastal' tourism and 'maritime' tourism. However, it is worth noting that in this study, although some of the respondents may have considered their trips to the coast and sea as tourism activities, this would not be the case for those living closer to the sea.



Kitesurfing in Burgas, Bulgaria

Which recreational activities do you engage in?

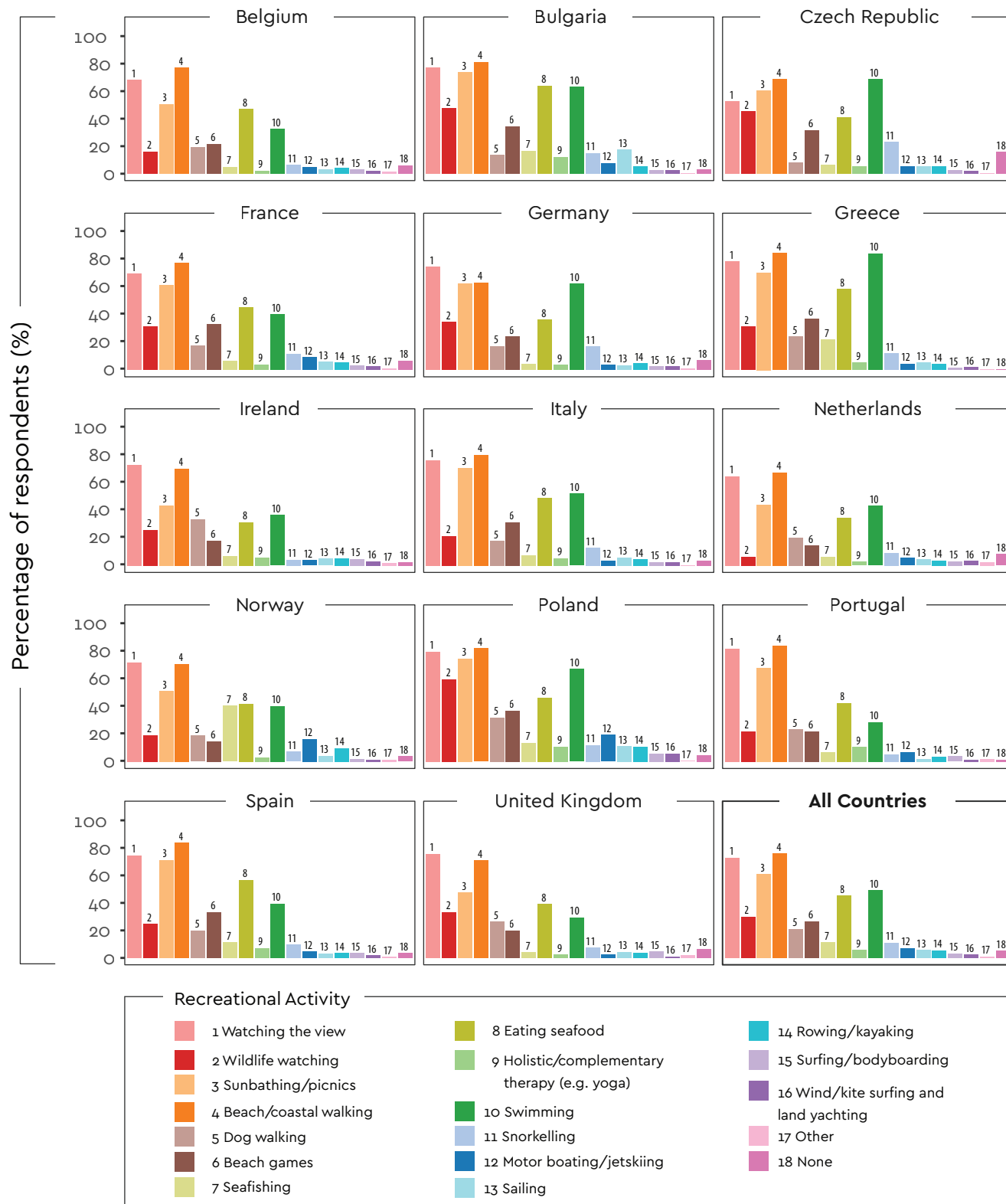


Figure 5-4



Boats in the Mediterranean Sea, Italy

5.2 Perceptions of marine activities

In order to understand public perception towards a specified range of marine activities (below), respondents were asked to score each activity in terms of how good or bad they felt it was for:

- a) the economy,
- b) the environment, and
- c) public health and wellbeing.

These questions assess how risky or beneficial respondents believed each activity to be in terms of the economy, the environment and public health and wellbeing, as well as reveal if the public made trade-offs between these three areas in terms of the perceived risks and benefits for each marine activity. Activities were chosen to reflect established and emerging maritime activities, including some of those previously identified as Blue Growth¹³ priority areas (renewable energy, biotechnology, marine and coastal tourism and aquaculture), as well as activities which would have relevance to Oceans and Human Health and the SOPHIE project work.

The specific marine activities were identified as the following:

- o Commercial fishing (wild fish, shellfish etc.)
- o Aquaculture (farmed fish, shellfish etc.)
- o Offshore windfarms
- o Offshore oil/ gas mining
- o Deep-sea mineral extraction (gold, cobalt etc.)
- o Producing medicines from marine organisms
- o Recreational visits (holidays, walking, relaxation etc.)
- o Water sports (swimming, sailing etc.)
- o Shipping (goods, cargo etc.)
- o Holiday cruises
- o Conservation activities (protecting marine wildlife etc.)
- o Community events (beach cleans etc.)
- o Coastal protection (against erosion by the sea etc.)
- o Planning the use of marine space (areas for recreation, aquaculture, renewable energy etc.)

Table 2. Established and emerging blue economy sectors and subsectors (The EU Blue Economy Report, (2019)¹⁴

Established Sector (and subsectors)	Emerging Sector (and subsectors)
Coastal tourism (beach based tourism and recreational activities, and water based activities and nautical sports)	Blue energy (offshore wind, and floating offshore wind, tidal and wave energy technologies)
Marine living resources (capture fisheries, aquaculture, processing and distribution)	Blue bio economy (exploration and exploitation of aquatic organisms)
Marine non-living resources (extraction of crude petroleum, natural gas and marine minerals, and corresponding support activities)	Marine minerals (marine mining or extraction of minerals and metals in/ on the seabed)
Ports, warehousing and water projects (warehousing and storage, cargo handling, construction of water projects and service activities incidental to water transportation)	Desalination (desalination plants)
Ship-building and repair (building of ships, floating structures, and pleasure and sporting boats, repair and maintenance of ships and boats, marine equipment and marine machinery)	Maritime defence (navies, defence and security and naval shipbuilding)
Maritime transport (sea and coastal water transport of passengers and freight, inland water transport of passenger and freight, renting and leasing of water transport equipment)	

¹³ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012DCo494>

¹⁴ European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

Q: On balance, how good or bad do you think the following marine activities are **for the economy** across Europe?

Looking at the mean values across all countries, the respondents perceived all included marine activities as being good for the economy. Consistent with official analysis¹⁵ citizens viewed coastal tourism in the form of 'recreational visits' (including 'holidaymaking') as the most important sector for the blue economy. However, 'offshore oil and gas extraction' were generally considered to be the least beneficial for the economy compared to the other activities, though these activities still scored neutral to good.

Although in decline in recent years, the offshore oil and gas sector remains an important contributor to the blue economy, with more than 80% of current European oil and gas production taking place offshore, mainly in the North Sea and, to a lesser extent, in the Mediterranean, Adriatic and Black Seas. In 2017 'non-living marine resources' (oil, gas and mineral extraction¹⁶) ranked third of the 'traditional' blue economy sectors, in terms of value added (€ 22,757 million) and employment (162,000 persons). **Clearly, there seems to be a large mismatch here between the reality of how important the oil and gas industries are to the European economy and public perceptions of their importance.**

The one exception to this mismatch was Norway, where respondents ranked 'oil and gas extraction' highest (most good) for the economy. This reflects the importance of the offshore oil and gas sector as Norway's largest economic sector measured in terms of value added, government revenues, investments and export value¹⁷. That the clear public understanding of the importance of this sector to the economy may, in part, be due to the fact that Norway has always recognised that these natural resources belong to society as a whole and has long put measures¹⁸ in place to ensure that the commercial exploitation of these resources results in maximum value creation for society.

Of note, **Germany was the only country ranking 'conservation activities' as least beneficial for the economy**. This is in contrast to other countries, including Spain, Poland, Portugal, Italy, France and Ireland, who ranked 'conservation activities' amongst their top three.

In terms of the emerging blue economy sectors, the EU's Green Deal to achieve carbon neutrality by 2050 stresses that offshore wind energy will be vital to achieving these targets. The UK has the largest capacity to generate offshore wind energy in Europe, with 45% of all installations. In line with this capacity, UK respondents perceived offshore wind energy as good for the economy, ranking it in their top three. Germany has the second largest offshore wind capacity in Europe, followed by Denmark, Belgium and the Netherlands. Respondents from Belgium rated 'offshore windfarms' as one of the two most favourable activities for the economy (the other was 'recreational visits'). In the Netherlands and Germany 'offshore windfarms' was ranked 4th and 5th respectively (in terms of how good it was for the economy). Other countries for whom 'offshore windfarms' aren't as important ranked it between 5th and 11th, with Spain and Poland ranking it 5th, the same as Germany. Looking to some of the other activities, Czech Republic and Germany both ranked 'medicines from the sea' 2nd in terms of economic impact, whilst Spain and Portugal were the only countries to rank 'planning the use of marine space' relatively high (3rd and 4th respectively).

¹⁵ European Commission (2019). The EU Blue Economy Report 2019. Publications Office of the European Union. Luxembourg.

¹⁶ The extraction of marine minerals here refers to aggregates. Deep-sea mineral mining is not considered in this category.

European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg

¹⁷ <https://www.norskipetroleum.no/>

¹⁸ <https://www.norskipetroleum.no/en/economy/governments-revenues/#taxes>

How good or bad do you think the following marine activities are for the economy across Europe?

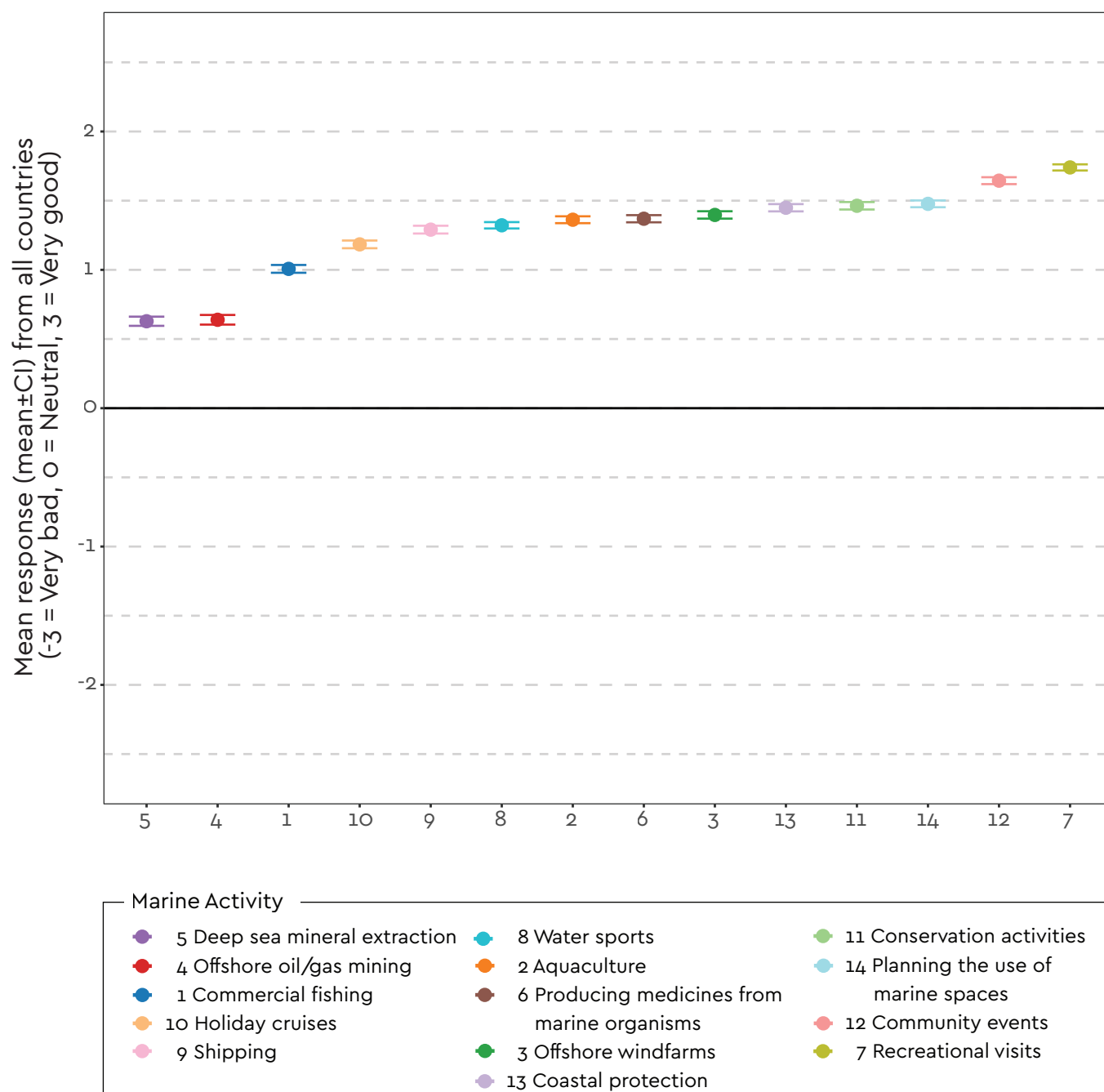


Figure 5-5

Q: On balance, how good or bad do you think the following marine activities are *for the environment* across Europe?

In comparison to the previous question, where respondents perceived all activities to be good for the economy, when asked about the same activities in relation to the environment, both negative and positive responses were recorded. Considering mean values **across all countries, five activities ranked below zero (neutral), and were therefore perceived by the public as being 'bad' for the environment. These were: 'holiday cruises', 'commercial fishing', 'shipping', 'deep-sea mineral extraction' and 'offshore oil/gas mining'.** With the exception of 'deep-sea mining', these activities are all established blue economy sectors (Table 2). This all-country trend was largely reflected in the individual country profiles, with ten of the 14 countries rating these activities below zero. Bulgaria was an exception, where the values for both 'shipping' and 'holiday cruises' ranked above neutral, indicating a slightly more positive public perception for these activities. It is interesting to note that tourism and shipbuilding and repair are important contributors to Bulgaria's blue economy, contributing approximately 55% and 10% to GVA¹⁹ respectively. In answer to the question regarding which marine activities they or someone from their household were involved in, respondents from Bulgaria indicated the 'cruise industry' and 'shipping' in their top three, the other sector being 'coastal tourism/ recreation'.

Whilst Norwegian respondents recognised the importance of the offshore oil and gas sector to their economy, they still perceived it to be bad for the environment. 'Aquaculture' was also perceived negatively by Norwegian respondents, ranking below zero. This is interesting given that Norway is the largest producer of farmed Atlantic salmon globally. Respondents from France, Germany and the UK also perceived 'aquaculture' to be bad for the environment. Whilst the UK and France are amongst the top aquaculture producing countries in Europe, others in the same category (Spain, Italy and Greece) did not rate 'aquaculture' as negative for the environment, however they did all perceive it to be less good for the environment than it was for their economy. In general, all respondents perceived 'aquaculture' more positively than 'commercial fishing', when thinking about the environment. Portugal ranked 'planning the use of marine space' quite high in comparison to other activities. Portugal had also ranked it amongst those activities it considered more beneficial for the economy.

Across all countries, 'deep-sea mineral extraction' and 'offshore oil/gas mining' showed the highest percentage of negative responses, with 32.2% and 41.2%, respectively, of all responses rating these activities as very bad for the environment. Comparable figures for 'commercial fishing', 'shipping', and 'holiday cruises' were 16.4%, 17.7% and 18.0% respectively.

'Offshore windfarms' were generally perceived as good for the marine environment, with 50.4% of all respondents rating them positively, whilst 24.5% rated them negatively and 25.2% were neutral. Of all activities, those considered to be most positive for the environment were 'community events', 'conservation activities' (the example provided was beach clean-up) and 'coastal protection', with 63.2%, 61.9% and 48.4% of all respondents rating these as very good for the environment. These activities also ranked in the top three in all country profiles. It is interesting to note that **Germany ranked 'conservation activities' highest for the environment, yet ranked it lowest when thinking about the economy, suggesting that they feel there is a trade-off between protecting the marine environment and growing the marine economy.**

¹⁹ European Commission (2019). The Blue Economy Report 2019. Publications Office of the European Union. Luxembourg

How good or bad do you think the following marine activities are for the environment across Europe?

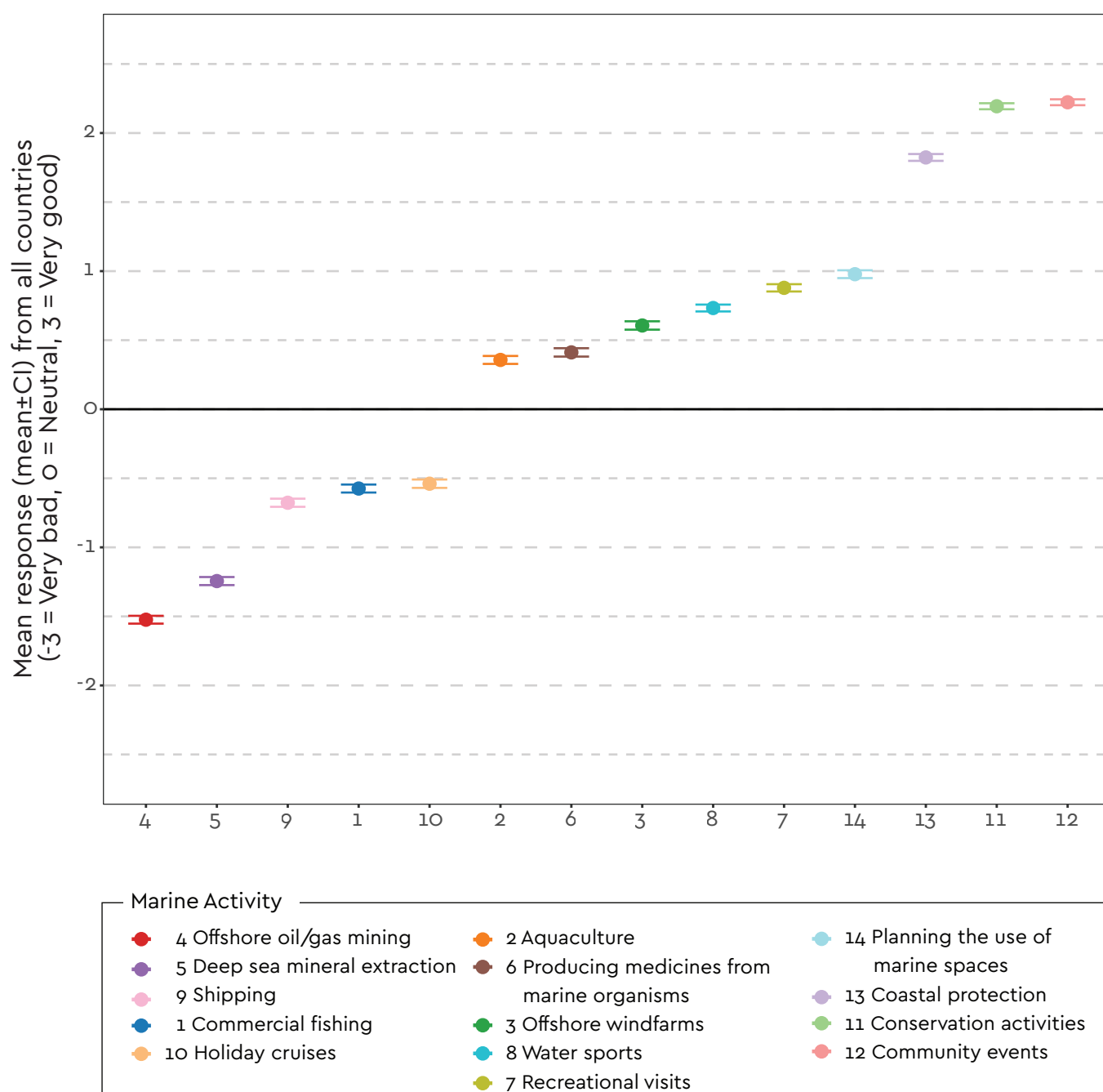


Figure 5-6

Q: On balance, how good or bad do you think the following marine activities are **for public health and wellbeing** across Europe?

When asked to consider the same list of marine activities in terms of their relationship to public health and wellbeing, 'deep-sea mineral extraction' and 'offshore oil/gas extraction' were perceived most negatively (consistently in the bottom two in all countries), though less so than in relation to the environment. **More than 50% of all respondents considered 'conservation activities' and 'community events' to be very good for public health and wellbeing.** 'Coastal protection' and 'recreational visits' were also rated favourably, with 45.4% and 42.8% of respondents rating these as very good, respectively. 'Conservation activities', 'community events' and 'coastal protection' appeared in the top four for nearly all countries.

Those activities which the public perceived to be bad for the environment, i.e. 'deep-sea mineral extraction', 'offshore oil and gas extraction', 'shipping', 'commercial fishing' and 'holiday cruises', were also perceived as bad (or least good) for public health and wellbeing. These five activities ranked in the bottom five for eight of the 14 countries, namely, Belgium, Czech Republic, France, Germany, Italy, the Netherlands, Poland and Spain. Exceptions included the UK, Norway, Greece, Ireland and Portugal who included 'aquaculture' in their bottom five (ahead of either 'shipping' or 'holiday cruises'). Respondents again made a distinction between 'aquaculture' and 'commercial fishing', with 'aquaculture' being perceived slightly better than 'commercial fishing' for public health and wellbeing. This was consistent across all countries, with the exception of Norway, who perceived 'commercial fishing' as better than 'aquaculture' for public health and wellbeing.

It was notable, that, across all countries, the activities which respondents generally perceived to be good for public health and wellbeing ('conservation activities', 'community events', 'coastal protection') were also those that they perceived to be good for the environment.

This degree of consistency in how overall respondents rated the 14 marine activities when thinking about the environment and public health and wellbeing, **may suggest that people perceived activities which protect and improve the marine and coastal environment to ultimately be beneficial for public health and wellbeing and vice versa.** This relationship is examined further in the next section.



Community beach cleanup, Dover, United Kingdom – © Port of Dover

How good or bad do you think the following marine activities are for public health and wellbeing across Europe?

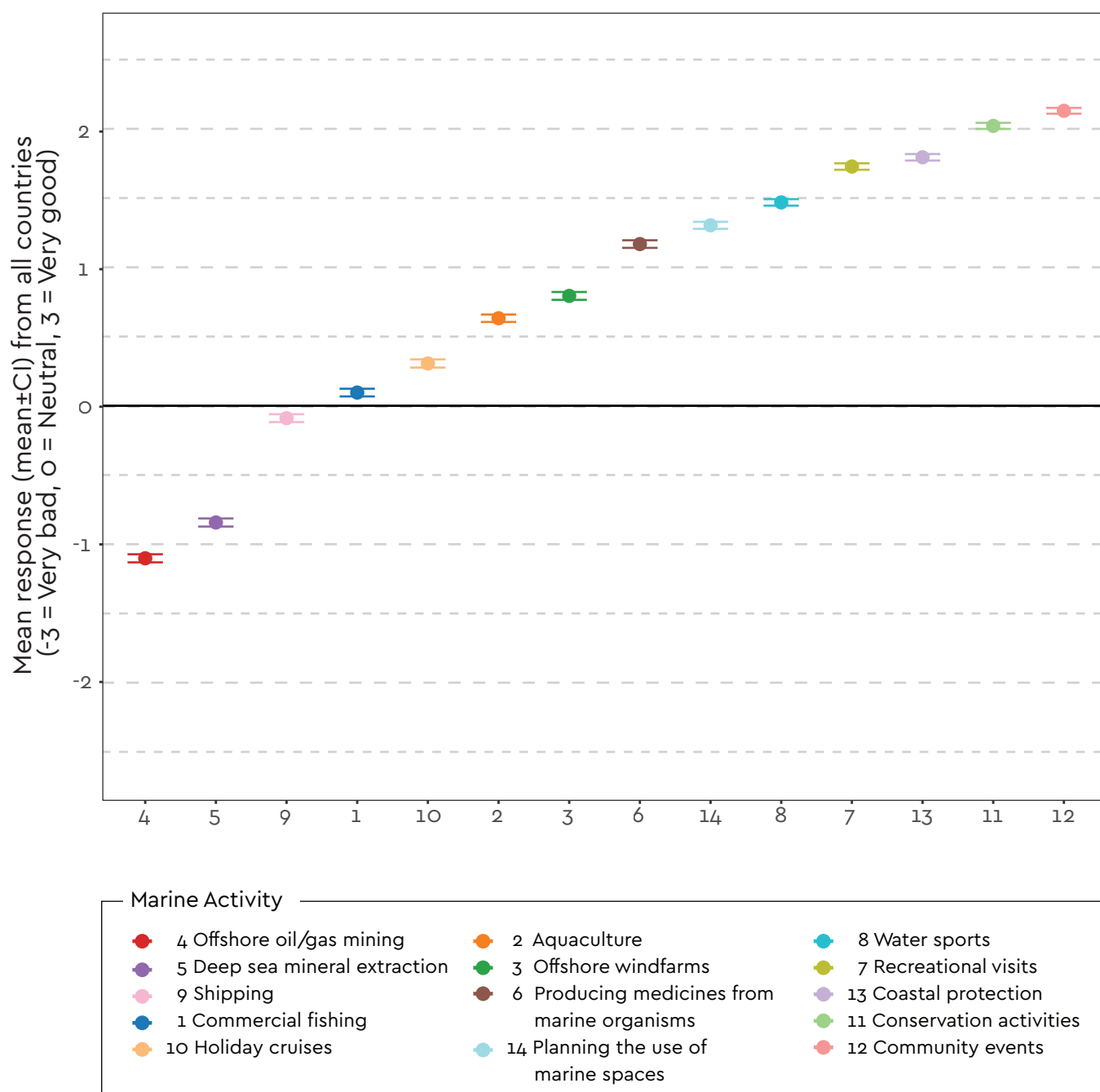


Figure 5-7

Marine Activity

- 1 Commercial fishing
2 Aquaculture
3 Offshore windfarms
4 Offshore oil/gas mining

- 5 Deep sea mineral extraction
6 Producing medicines from marine organisms
7 Recreational visits

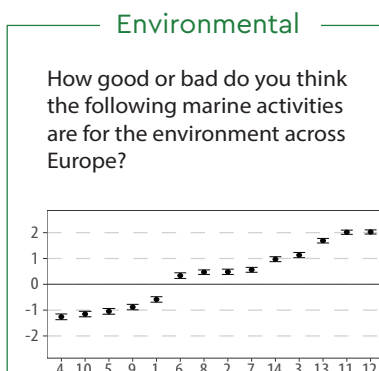
- 8 Water sports
9 Shipping
10 Holiday cruises
11 Conservation activities

- 12 Community events
13 Coastal protection
14 Planning the use of marine spaces

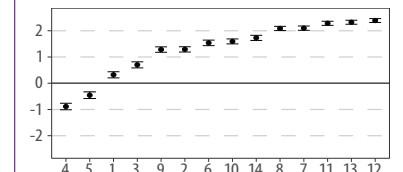
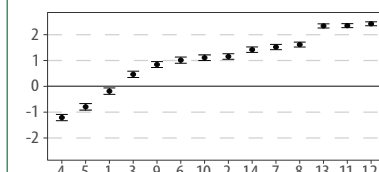
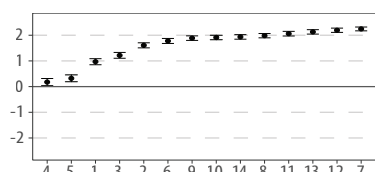
Mean response
(mean \pm CI)

-3 = Very bad
0 = Neutral
3 = Very good

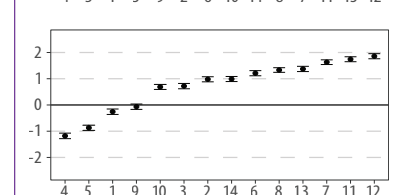
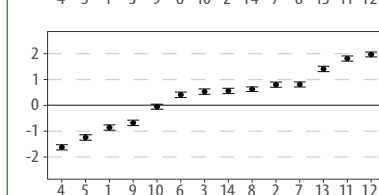
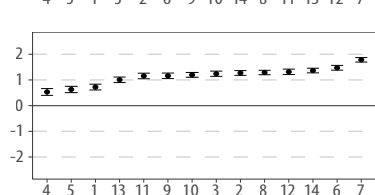
Belgium



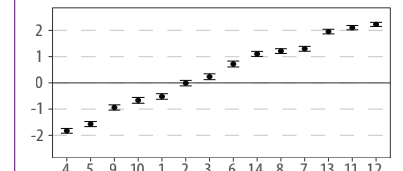
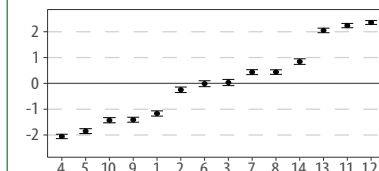
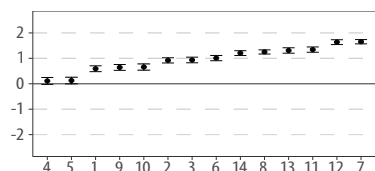
Bulgaria



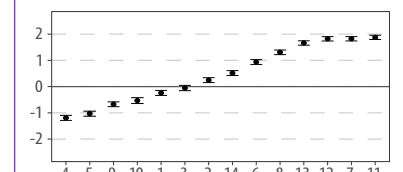
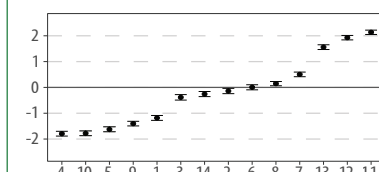
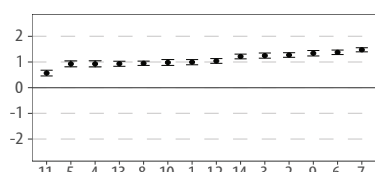
Czech Republic



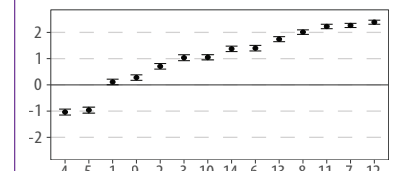
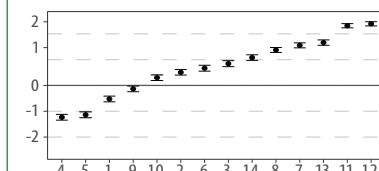
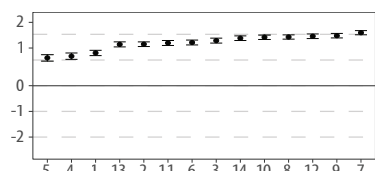
France



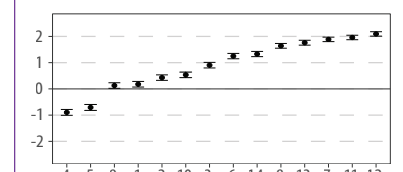
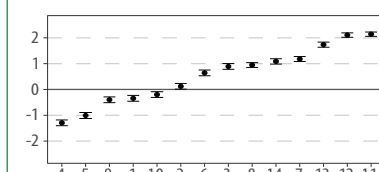
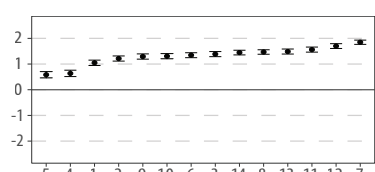
Germany



Greece



Ireland



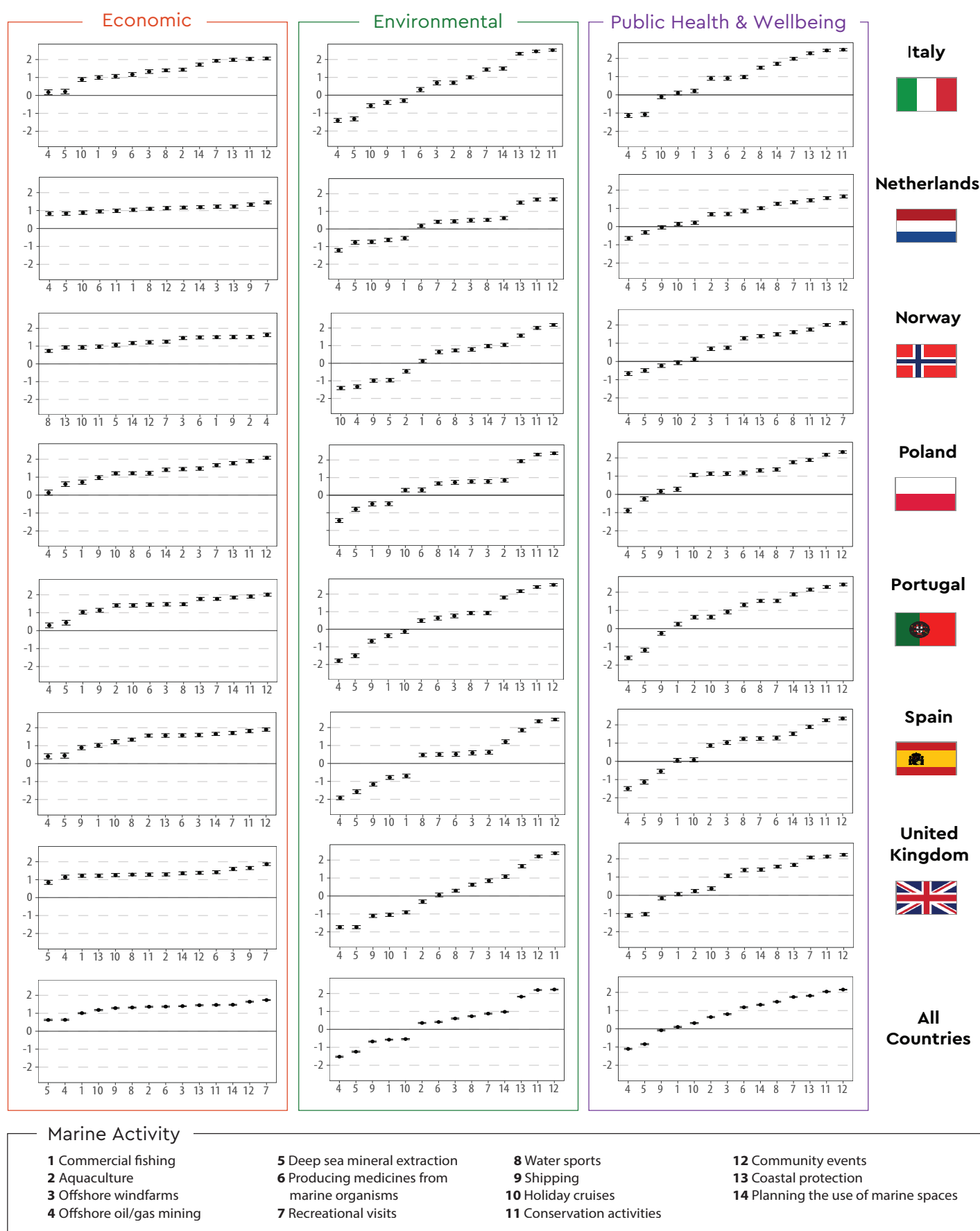


Figure 5-8



5.3 Regulations, risks and research

This section examines what level of health-related policy intervention the public would like to see in order to protect public health and wellbeing from the marine activities specified in the previous section. It also examines the level of concern expressed by the public over the health impacts of potential marine threats and where they thought more scientific research was needed to better protect public health and wellbeing in relation to the marine environment.

Q: Some people think we need strong policies (e.g. laws, regulations, subsidies) to protect public health, while others prefer little direct intervention. How much *policy intervention* do you think is needed *to protect public health and wellbeing* from the following activities?

In this question respondents were asked to consider how much policy intervention they felt was needed to protect public health and wellbeing from each of the 14 marine activities detailed previously (page 23).

Considering the combined responses from all countries, **'offshore oil/gas mining' and 'deep-sea mineral extraction' were the two activities that scored highest in terms of percentage of respondents who desired the most policy intervention to protect public health and wellbeing** (46.8% and 41.9% respectively). This is not surprising, given that these were also the two activities most people considered to be negative for both public health and wellbeing and the environment. Italy is something of an outlier here, with the desired degree of policy intervention for these two activities lower down their ranking compared to other activities.

Perhaps surprising, is that the next two marine activities rated by respondents as requiring the highest level of policy intervention to protect public health and wellbeing, were 'coastal protection' and 'conservation activities'. Since these activities were perceived as being 'good' for both public health and wellbeing and the environment in the previous questions, one explanation could be that respondents interpret policy intervention as meaning different things in different contexts. For these two activities, the public might have believed that policy intervention will support/ promote 'coastal protection' and 'conservation activities', thereby protecting public health and wellbeing.

'Planning the use of marine space' ranked 5th in terms of the desire for more policy intervention, suggesting a degree of support for more policy intervention to implement better marine spatial planning. Looking at the individual country breakdowns, 'planning the use of marine space' ranked amongst the top five for Belgium, Bulgaria, Italy, Portugal, France, Greece and Spain. Of these countries, only Belgium – the country with the shortest coastline in our study – has a marine spatial plan in place.

The EU's maritime spatial planning (MSP) directive requires the 23 coastal Member States to develop a national maritime spatial plan by 31 March 2021. The purpose of these plans are to reconcile competing interests for marine space, to reduce conflict, promote synergies and cross-border cooperation, and protect the environment. Currently, the relevant Member States are in different phases of the MSP process, with plans either in preparation, adopted or in review. **Implementation of MSP offers a real opportunity to put the concept of 'Oceans and Human Health' into practice, through the application of an ecosystem based approach to management, recognising the social, economic, health and wellbeing component of the ecosystem.**²⁰

'Water sports' and 'recreational visits' were the two activities that respondents rated as requiring least policy intervention to protect public health and wellbeing. In this context it is likely that the public believed policy intervention would prevent them from doing the activities that they enjoy, rather than as a way of enhancing their experiences of these activities. The degree of desired policy intervention varied across the different countries, with respondents from the UK and Norway requiring lower levels of policy intervention for 'recreational visits' and 'water sports' than the other countries.

²⁰ McMeel, O., Tonné, N. and Calewaert, J.-B. (2019) Human health and EU maritime policy: Closing the loop. H2020 SOPHIE Project. Brussels, Belgium. DOI 10.5281/zenodo.3663620

Norway was the only country to rank 'aquaculture' highly, in terms of desire for more policy intervention. As discussed earlier, Norway is the world's largest producer of farmed Atlantic salmon, but this sector does not necessarily enjoy unanimous public support²¹. In the previous questions, Norway considered 'aquaculture' to be amongst the better activities for the economy, but perceived it as bad for both the environment and public health and wellbeing. Therefore, their desire for increased policy reflects these perceptions.

Whilst 'commercial fishing' and 'holiday cruises' were perceived more negatively in terms of both the environment and public health and wellbeing, when looking at the degree of policy intervention required, most countries made a distinction between them, with less policy intervention being required for 'holiday cruises' than for 'commercial fishing'.



Aquaculture farm in the Saronic Gulf, Greece – © Artur Rydzewski

²¹ <https://www.frontiersin.org/articles/10.3389/fmars.2017.00071/full>

How much policy intervention do you think is needed to protect public health and wellbeing from the following marine activities?

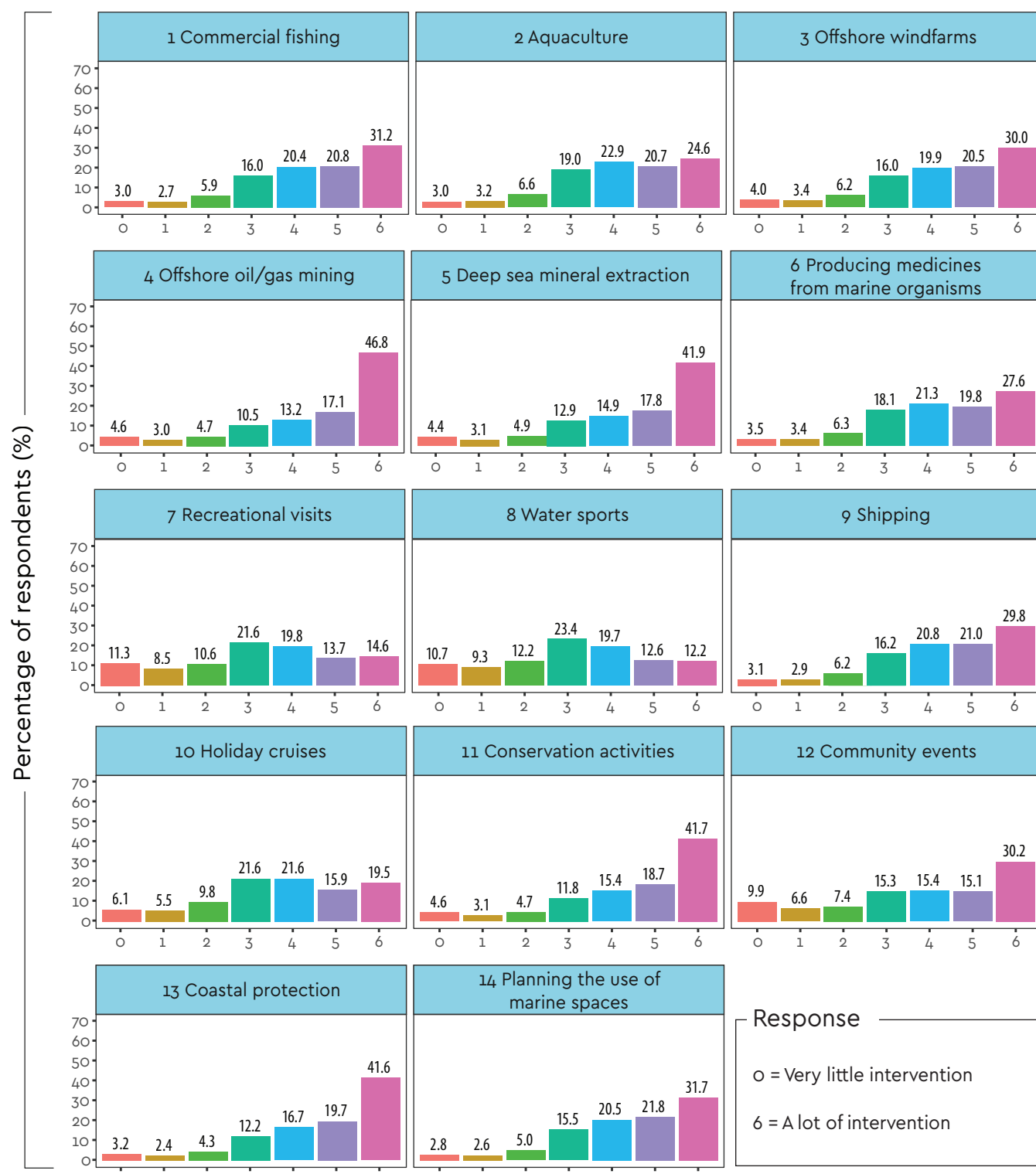


Figure 5-9

How much policy intervention do you think is needed to protect public health and wellbeing from the following marine activities?

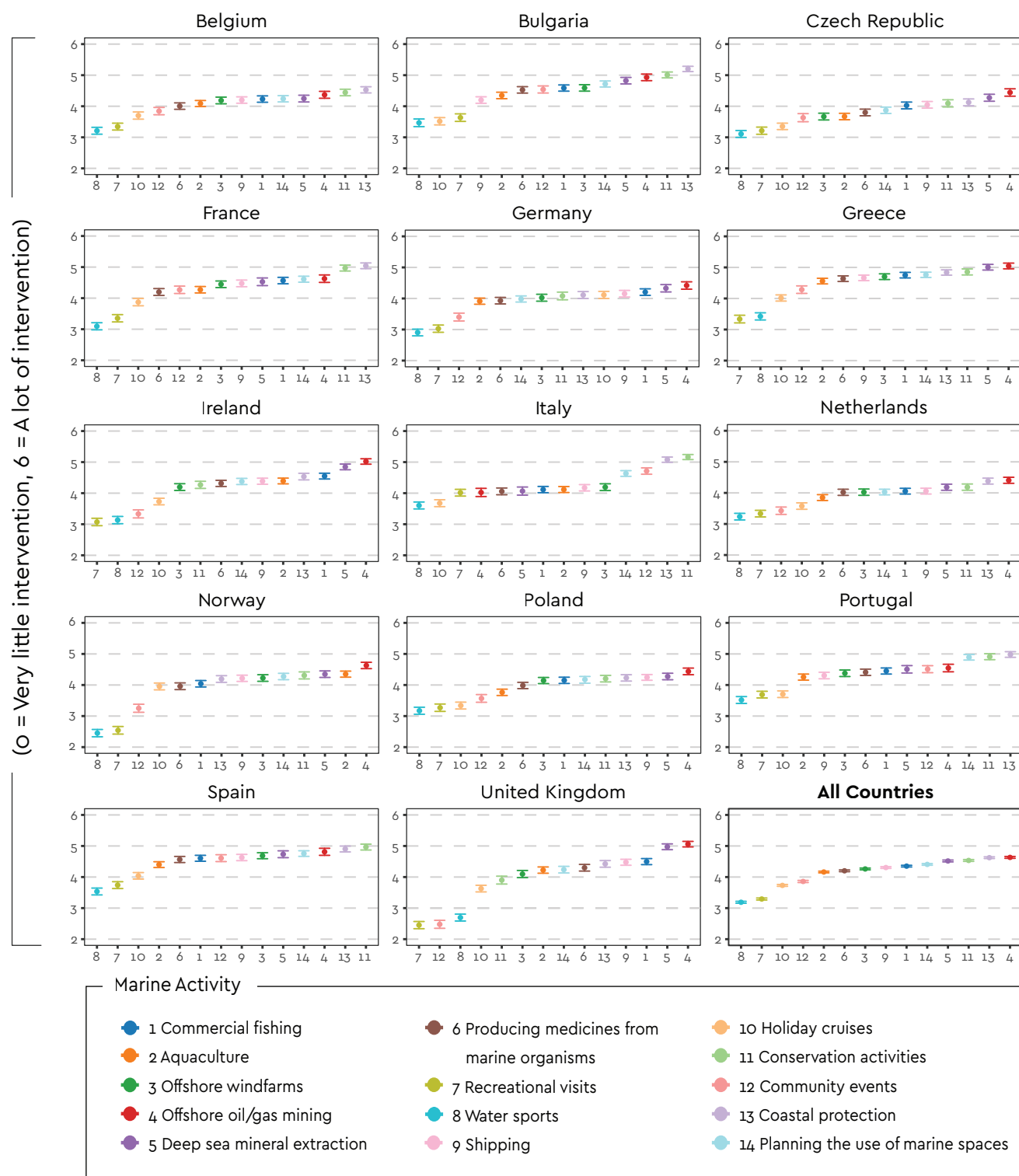


Figure 5-10

The following figures combine and summarise the results from the last section, *i.e.* responses about how good or bad European citizens perceived marine activities to be for the economy, the environment and public health and wellbeing, along with their responses on the need for policy intervention.

What is clear from these graphs is that **whilst respondents generally perceived the 14 marine activities as good for the economy**, they realised that some of these come with risks for the environment and for public health and wellbeing. Certain economically important maritime activities, *e.g.* 'oil and gas mining', 'shipping' and 'commercial fishing', were perceived as less economically important than they actually are for the European economy, possibly because they were perceived more negatively from the point of view of the environment and public health and wellbeing.

There is a strong linear relationship between perceived health and perceived environmental impact of the activities, supporting the point made earlier, that what is perceived as good for the environment, is good for public health and wellbeing, and vice versa. Respondents did, however, perceive certain activities more negatively from an environmental perspective ('commercial fishing' and 'cruises') than from a public health and wellbeing perspective. Indeed, even from a public health and wellbeing perspective, certain activities were not perceived particularly well, despite their potential importance as a source of jobs, nutritious food ('commercial fishing') and recreation ('holiday cruises').

Relationships between the perceived economic, environmental and public health and wellbeing impact, together with the desired level of policy intervention in 14 marine activities

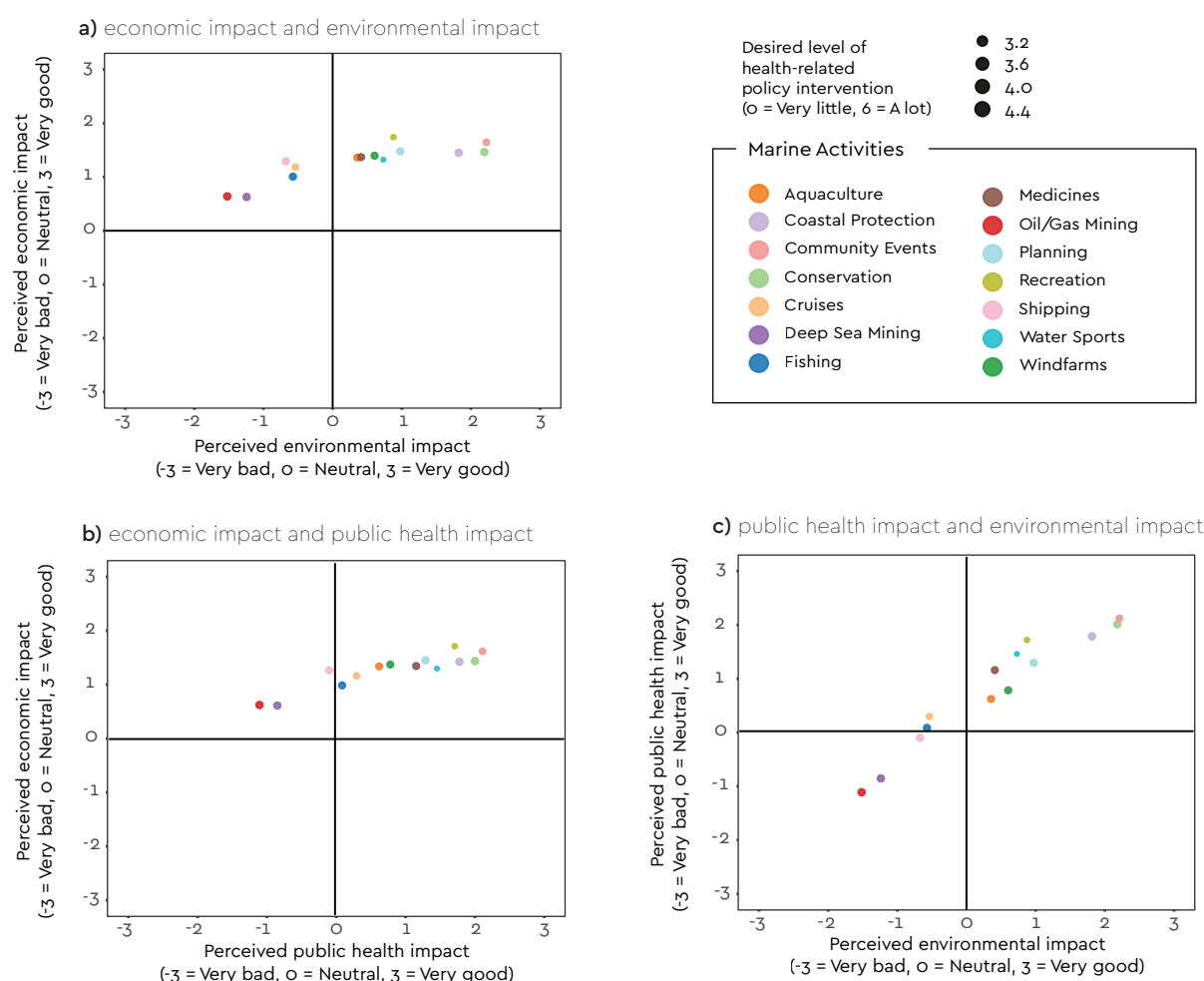


Figure 5-11 a, b and c

Q: How important do you think each of the following goals are for *policy makers* and for *yourself* across Europe currently?

- 'Increasing economic growth for marine businesses'
- 'Protecting the marine environment'
- 'Protecting and promoting public health and wellbeing from the marine environment'

This comprised two separate questions, with respondents being asked to rate how important they thought the above three marine goals were, firstly, for policy makers, and then for themselves.

Comparing the all-country responses, **'protecting the marine environment' was considered by respondents to be the most important goal both for themselves and for policy makers**, although respondents felt that it was more important to them than it was to policy makers. 'Increasing economic growth for marine businesses' was considered the least important goal for the respondents, and also for policy makers, compared to the other goals. Respondents rated 'protecting public health and wellbeing from the marine environment' as being the second most important goal, both for themselves and for policy makers. The goal which had the least divergence between how important they rated it for themselves and for policy makers was 'increasing marine economic growth for marine businesses', with most divergence seen for the 'environmental goal'.

The all-country pattern was largely reflected at individual country level, with most countries rating 'protecting the marine environment' as the most important marine goal, both for themselves and for policy makers, followed by 'protecting public health and wellbeing' and then 'increasing economic growth'. Exceptions included Norway, the Netherlands, Germany, Poland and the UK with regard to how they rated the goals for policy makers. Norway and Germany both felt that the most important marine goal for policy makers was promoting 'economic growth'. Whereas for the Netherlands, respondents perceived all three goals to be equally important for policy makers. The UK and Norway both perceived 'public health and wellbeing' to be the least important marine goal for policy makers.

Bulgaria showed very close alignment between themselves and how they felt policy makers would respond with regards to the importance they placed on 'promoting economic growth', but less alignment on the other two goals. Greece and Portugal showed similar very close alignment on the 'economic growth goal', and also close alignment on the other two goals.

Responses from Germany showed the most disparity between how important respondents felt the goals were for themselves, compared to how important they felt they were for policy makers, with the largest divergence seen on the goal to 'protect the environment', with respondents considering this goal to be much more important for themselves than for policy makers. It was interesting also how little importance respondents from Germany placed on the 'economic goal' for themselves (lower than all other countries). Instead, they placed much more importance on the 'environmental' and 'public health and wellbeing' goals. A similar pattern was observed for France, with respondents placing more importance on the 'environmental' and 'public health and wellbeing' goal for themselves, than for policy makers.

How important do you consider each of the following goals to be for policy makers and for yourself?

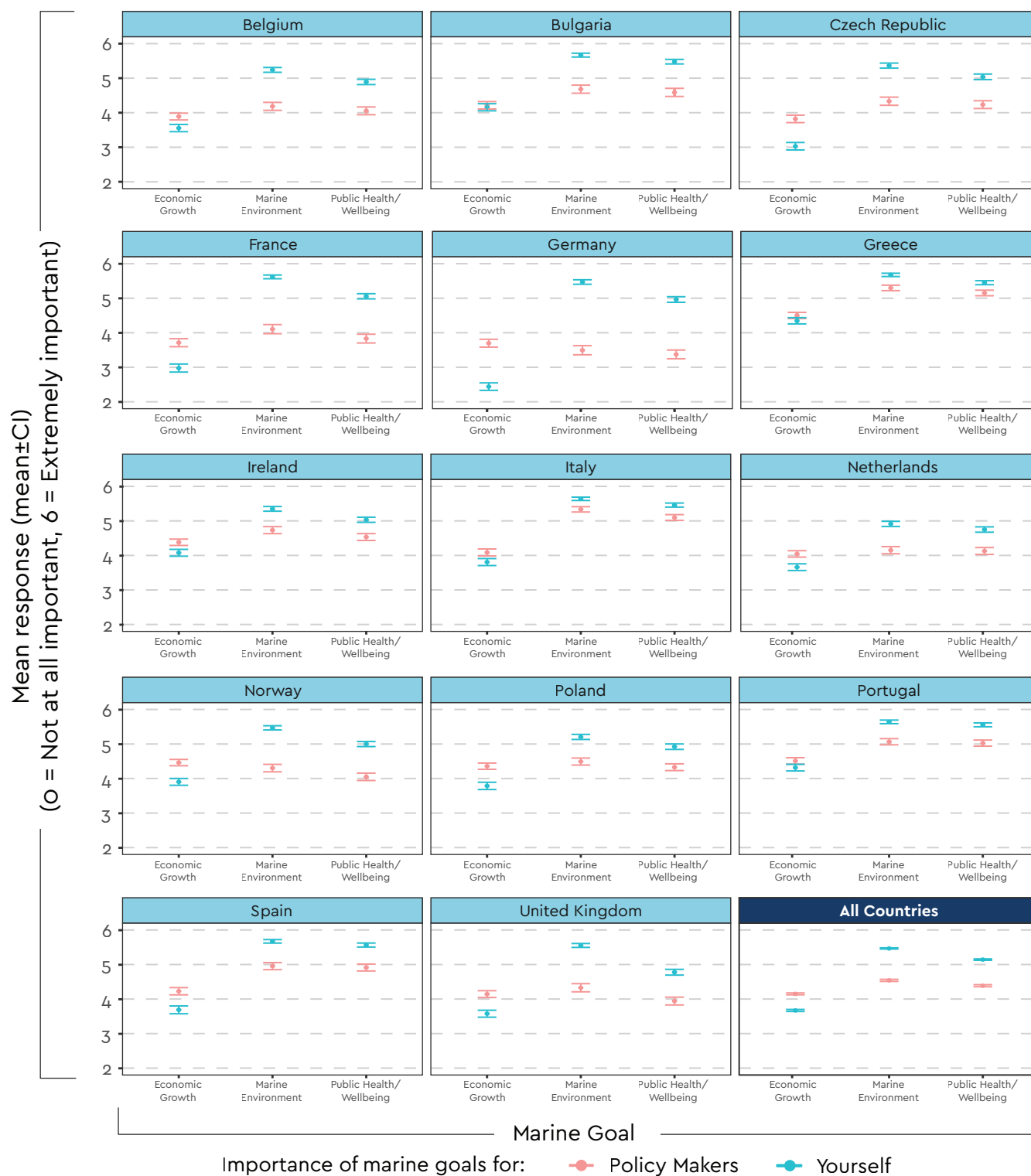


Figure 5-12

Q: How concerned do you feel about the following potential *threats to public health/wellbeing?*

When asked to consider a range of marine threats to public health and wellbeing, 'plastic pollution of marine waters' was the threat that respondents felt most concerned about, and this was closely followed by 'chemical/oil pollution of marine waters'. Looking at the individual country profiles, a similar picture could be observed, with respondents from all countries feeling most concerned about pollution (plastic and chemical) with similar degrees of concern. After pollution, the issues of most concern across all countries were 'loss of marine species' and 'contamination of seafood'.

'Drowning' ranked as one of the lowest concerns across all countries, however the degree of concern was different amongst countries. Germany and Norway showed very low levels of concern with regard to 'drowning', whereas Greece, Portugal, Spain and Bulgaria had much higher levels of concern. **Across all countries, concern about 'drowning' was highest amongst respondents living 5–20 km from the coast and amongst those working in the marine sector.**

One explanation why respondents were less concerned about potentially dangerous threats such as 'drowning', 'sunburn/sunstroke' and 'jellyfish' is because they feel they have a degree of control over their exposure to these threats, for example by not engaging in activities that put them at risk of these events. On the other hand, they may feel that they have less control over how the 'pollution' of marine waters (by plastic or chemical waste) could be a threat to their health, for example, because they may be exposed to these pollution events of marine waters via the food chain. Particularly, in regard to marine plastic pollution, although the effects on human health are not yet fully understood²², it has been the subject of significant media attention, which may have contributed to these heightened levels of concern.

It is interesting to compare these results to a 2011 report²³, which compiled the opinions of 10,000 European citizens about marine climate change risks and impacts. The report showed that when the public were prompted to indicate their concern about a list of marine issues, 'pollution at the coast or in the sea' was also the issue respondents were most concerned about. The next two issues that respondents to the 2011 survey were most concerned about were 'overfishing' and 'destruction of habitats at the coast or sea'. Again this corresponds with the current study which showed 'loss of marine species' and 'collapse of fish stocks' amongst the issues that were of most concern to respondents. In fact, taking the top six issues that were of most concern in the current study, all could be related to 'pollution' of one form or another and to 'marine biodiversity loss'. **It is of note that in the almost ten-year time lapse between these studies, the public's concern remains 'marine pollution' and 'loss of marine biodiversity', although the topic of plastic pollution in particular has risen in the public's awareness over time.**



Harbour seal on the beach, France

²² Galgani et al., (2019) Front. Mar. Sci., 26 April 2019 | <https://doi.org/10.3389/fmars.2019.00208>

²³ <http://www.vliz.be/projects/clamer/images/stories/deliverables/deliverable%202%202%202%20polling%20report%20%20-%20final%20v3.pdf>

How concerned do you feel about the following potential threats to public health and wellbeing?

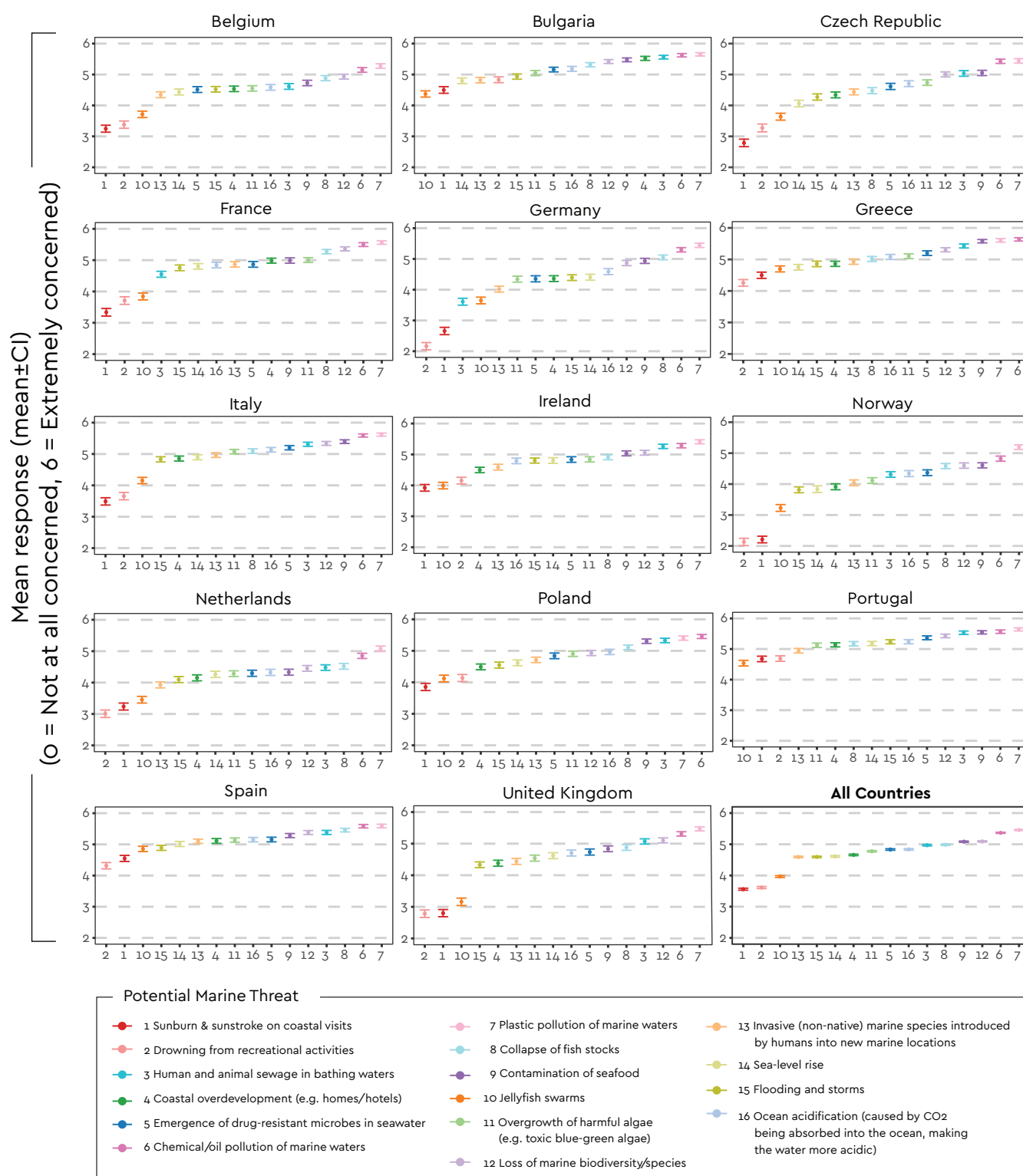


Figure 5-13

Q: To what extent would you support **more research funding** in the following areas to **better understand public health / wellbeing implications?**

When asked to consider their support for more research funding into a range of marine research areas, with the aim of improving understanding of public health and wellbeing implications, **respondents were most supportive of more research funding into the 'protection of marine species/wildlife' and 'plastic pollution of marine waters'**. This was in line with the results of the previous question, where respondents indicated feeling extremely concerned about these areas as potential threats to public health and wellbeing.

Given the importance respondents placed on the environmental goal in the previous section, and their negative perception of certain marine activities in relation to the environment, protecting and conserving the marine environment (and its biodiversity) is clearly a priority for them. Similarly, activities that adversely affect it were of concern and viewed negatively ('pollution' in all its forms). One of the other research areas that respondents were supportive of funding was towards 'education/ awareness raising'. This also fitted with their positive perception towards 'community events' and 'conservation'.

'Coastal protection/defences' also received a lot of support, ranked amongst the top five for all countries, with the exception of Norway and Greece. This is interesting in that 'sea-level rise' and 'flooding and storms' were not of particular concern to respondents in the list of marine threats discussed earlier in this report.

Respondents were least supportive of more research funding being used to explore the public health and wellbeing implications of 'deep-sea mining'; this finding was also consistent across all countries. Respondents lack of support for more research funding into 'deep-sea mining' corresponds to their negative view of the activity as evidenced in the earlier questions where they identified 'deep-sea mineral extraction' as one of the activities they perceived as most harmful to the environment and public health and wellbeing and least beneficial for the blue economy.

'Deep-sea mining' has been considered as an emerging activity in the blue economy and although still in the exploratory stage, it was also one of the five priority areas identified in the European Commission's Blue Growth Strategy²⁴. However, recent research²⁵ has shown that biodiversity loss from deep-sea mining is likely to be inevitable and irrevocable and given the costs and risks of deep-sea mining, its future as a commercial venture remains unclear.

Another 'blue growth' area that respondents across all countries were not particularly supportive of was 'biotechnology'. However, given its potential to contribute to societal challenges through the provision of food, feed, energy, medicines and cleaner industrial processes, this is an area that has and continues to receive significant funding support through the European Commission's framework programmes for research and innovation. It may be that respondents were less aware of the potential of biotechnology to contribute to human health and wellbeing, hence their response.

Looking at country differences, support for funding into research on 'bathing water quality' ranked quite high for Poland, Bulgaria and Greece, perhaps unsurprising given that these were also the countries where the highest percentage of respondents indicated 'swimming' as one of the recreational activities they engaged in.

Support for 'marine renewable energy' ranked quite high in Belgium and the UK, two of the countries whose respondents had perceived 'offshore windfarms' as one of the most beneficial activities for the economy. There was little support for more research funding into 'sustainable aquaculture', with the exception of Norway, where it ranked quite highly. Norwegian respondents had recognised the importance of 'aquaculture' to the economy, yet perceived it to be bad for both the environment and public health and wellbeing.

²⁴ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012DC0494>

²⁵ <https://www.nature.com/articles/ngeo2983>, <https://www.frontiersin.org/articles/10.3389/fmars.2018.00053/full>, <https://www.sciencedirect.com/science/article/pii/S0308597X17306061>

To what extent would you support more research funding in the following areas, to better understand public health/ wellbeing implications?

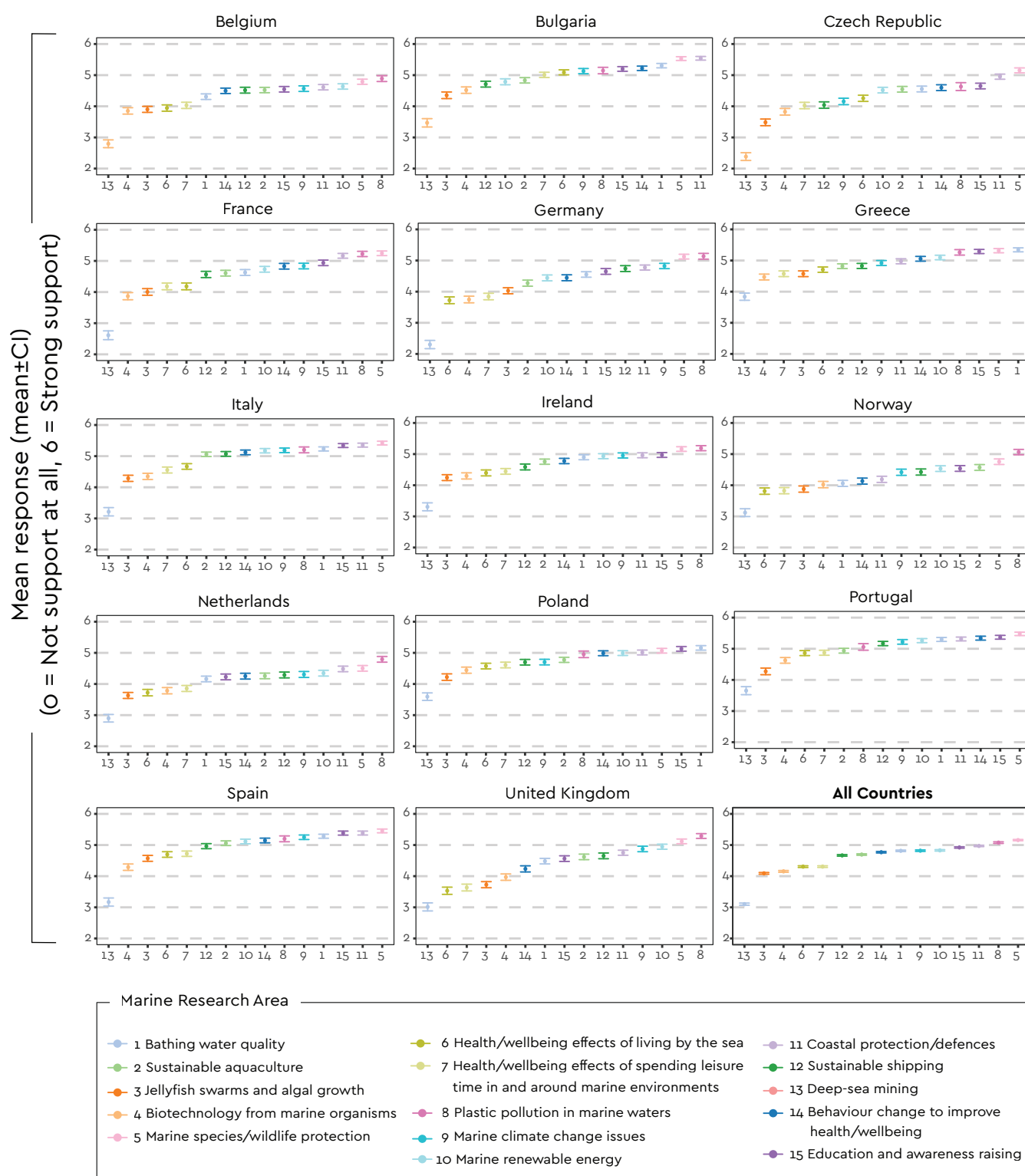


Figure 5-14

Q: In your opinion, what is the key priority (or priorities) for protecting both public health and the health of the marine environment for a sustainable future?

This was the only open-ended question in the survey, inviting respondents to identify their unprompted priorities for both public health and wellbeing and the health of the marine environment for a sustainable future. Most respondents provided more than one priority, generating over 14,000 priorities. Participants were then given the opportunity to clarify each priority using a clarification statement. A random sample of 700 responses, 50 from each country, was selected for further analysis, with '*protection of the marine environment*' and '*preventing pollution*' among the most frequently cited citizen priorities for OHH (Fig. 5–15). These responses were organised into 23 priority categories. Categorisation means that priorities with shared commonalities were grouped together into priority categories. These results were brought to a Citizen Workshop, which took place in Ireland in November 2019 with 14 citizens led by SOPHIE partner, NUI Galway. The workshop used Collective Intelligence (CI), a methodology that specialises in facilitating group discussion and consensus building around priorities and solutions. At the workshop, participants were also invited to contribute their top three priorities, resulting in a total of 758 priorities. This work led to the identification of the top ten most voted for priority categories for Oceans and Human Health, (listed below). **A key outcome of the workshop was the generation of a Structural Priority Map for OHH, revealing not only priorities for OHH but also how citizens considered the priorities to be interrelated and dynamic.**

The top ten most voted for priorities for Oceans and Human Health by citizens include:

- Stronger legislation and regulation of marine industrial activities (23 votes)
- Education (20 votes)
- Create a culture of care (18 votes)
- Raise awareness (14 votes)
- Invest in OHH (11 votes)
- Balance human actions with marine protection (10 votes)
- Eliminate plastic pollution (10 votes)
- Develop technologies (10 votes)
- Reduce global warming (9 votes)
- Increase the knowledge-base on OHH (8 votes)

These top ten priorities highlight what citizens consider most important for protecting public health and wellbeing and the health of the marine environment. The structural priority map (see below), shows how these priorities are interrelated and how they influence each other. This map can be used by different organisations, institutions in different sectors and countries e.g. policy makers, marine scientists, public health, industry and media – enabling decision-makers to see how combined efforts, coordinated and integrated approaches are the way forward.



Figure 5-15 Illustrated word cloud representing citizen responses (n=758)

Oceans and Human Health Structural Priorities Map

"This structural OHH priority map is read from left to right with the priorities to the left significantly impacting the priorities to the right. Four different priority pathways are evident, with directional arrows indicating pathways of influence. For example, on the left, the need to 'Increase the Knowledge-Base on Oceans and Human Health' significantly impacts the need to 'Eliminate Plastic Pollution', which in turn significantly impacts the need to 'Balance Human Actions with Marine Protection'. The priorities grouped together in the same box, such as 'Education', 'Create a Culture of Care' and 'Raise Awareness' are highly interdependent, reciprocally inter-related and any outcome in one will greatly impact the others."

From Britton, E., McHugh, P. & Domegan, C. (2019) Our Oceans & Human Health Citizen Conversations Summary Report, EU SOPHIE Project, Whitaker Institute, NUI Galway, Ireland²⁶.

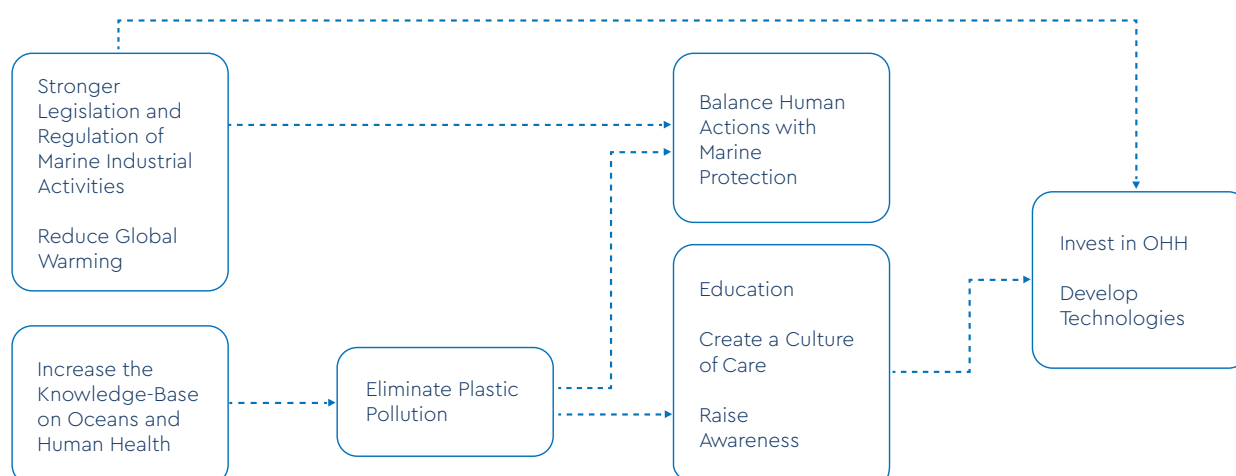


Figure 5-16



6

So, what next?

Oceans and Human Health (OHH) emerged as a scientific metadiscipline to research the complex interactions between the marine environment and human health and wellbeing. The SOPHIE project has mapped out the research priorities to establish OHH in Europe. But what SOPHIE, and the wider work of the consortium partners has also demonstrated, is that OHH is much more than a scientific discipline; it is a framework within which different communities (researchers, community groups, environmental managers, planners, policy makers, etc.) must work together to better understand, monitor and address our maritime interactions, for the benefit of public health and the health of our marine environment. To achieve this, the concept of Oceans and Human Health must be communicated widely and there must be buy-in by the relevant stakeholders; funders, policy-makers and maritime stakeholders. European citizens are all stakeholders, however, until this study, their perceptions, concerns and priorities about Europe's seas and oceans, and their interactions with these spaces, were largely unknown.

The SOPHIE survey is the first to gather data which looks at interlinkages between the marine environment, human activities and public health and wellbeing. These data provide the first baseline of what EU citizens think about their marine environment and its impacts on public health. This information will help us to understand the beliefs and perceptions in different groups and cultures across Europe, at least at the time the survey was carried out (Spring 2019). At the time of writing this report, we stand ready to enter the UN Decade of Ocean Science (2021-2030) for Sustainable Development, to ensure that ocean science can fully support countries' actions to sustainably manage the oceans and achieve the 2030 Agenda for Sustainable Development. A longitudinal study to understand how public perceptions are changing over the course of this decade would be extremely valuable to understand the impact of the decade and of the Sustainable Development Goals.

Europe has set an ambitious target to reach climate neutrality by 2050 (The European Green Deal). The European Commission, in its communication on the European Green Deal,²⁷ recognises the role the ocean and the 'blue economy' will have to play in 'alleviating the multiple demands on the EU's land resources and tackling climate change'. It further recognises the following:

'The involvement and commitment of the public and of all stakeholders is crucial to the success of the European Green Deal. Recent political events show that game-changing policies only work if citizens are fully involved in designing them. People are concerned about jobs, heating their homes and making ends meet, and EU institutions should engage with them if the Green Deal is to succeed and deliver lasting change. Citizens are and should remain a driving force of the transition.'

The responses from this survey will help inform policy makers about the aspirations and fears of the public, and, in turn, may provide information to help decision makers balance the needs of economic development, environmental protection, and public health and wellbeing and address the marine and maritime trade-offs that will have to be made to achieve the Green Deal.

In 2018, the European Parliament adopted a resolution²⁸ on international ocean governance which, amongst other recommendations, urged the European Commission to:

'support international efforts to protect marine biodiversity' and called for an 'international moratorium on commercial deep-sea mining exploitation licences until such time as the effects of deep-sea mining on the marine environment, biodiversity and human activities at sea have been studied and researched sufficiently and all possible risks are understood'. The same resolution also highlights marine plastic waste as 'a major international challenge', and calls for measures to address it, such as increased research support 'to make the EU an initiator of innovative solutions, and to assume a leading role on the matter at global level'.

The results of our survey clearly show that the public are supportive of these measures.

This report provides the overview findings from the SOPHIE survey. The data have also been subject to much deeper analyses. Finer detailed results will be presented elsewhere, comparing the public's interactions and perceptions at an overall and country level, as well as examining the role of individual characteristics (e.g. sociodemographic, marine contact and psychological variables) in predicting these perceptions. As these resources become available they will be published on the SOPHIE website and the conversation will continue. We invite you to join in.

- Visit the SOPHIE website: <https://sophie2020.eu/>
- Join the conversation: www.sophie2020.eu/activities/community-platform

²⁷ https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

²⁸ https://www.europarl.europa.eu/doceo/document/TA-8-2018-0004_EN.html





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