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Coastal Governance Index 2015

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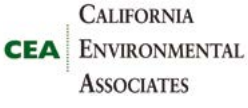

About this report

The Coastal Governance Index is an Economist Intelligence Unit report, commissioned by the David and Lucile Packard Foundation and California Environmental Associates. Hilary Steiner and Jimena Serrano were the project managers.

The quantitative index underlying this report measures the extent of government regulation and management across 20 key ocean economies to assess the state of play in the environment for effective coastal governance. It is based on wide-ranging desk research and comprised of 24 indicators and 43 sub-indicators across six thematic categories: policy and institutional capacity; business environment for coastal activities; water quality; minerals and energy; land; and living resources. The categories, and the individual criteria within them, are weighted according to neutral weights reflecting our assumption that countries should do well across all criteria in order to have the foundation for successful coastal governance. The methodology and all indicators are discussed in detail in the methodology chapter of this report.

The Economist Intelligence Unit bears sole responsibility for the content of this report. The findings do not necessarily reflect the views of the commissioning organisations.

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The complete index, as well as the detailed scoring for each country, can be viewed at: http://www.economistinsights.com/analysis/coastal-governance-index

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The Economist Intelligence Unit (EIU) is the research arm of The Economist Group, publisher of The Economist. As the world's leading provider of country intelligence, it helps governments, institutions and businesses by providing timely, reliable and impartial analysis of economic and development strategies. Through its public policy practice, the EIU provides evidence-based research for policymakers and stakeholders seeking measurable outcomes, in fields ranging from gender and finance to energy and technology. It conducts research through interviews, regulatory analysis, quantitative modelling and forecasting, and displays the results via interactive data visualisation tools. Through a global network of more than 350 analysts and contributors, the EIU continuously assesses and forecasts political, economic and business conditions in more than 200 countries. For more information, visit www.eiu.com.

About the David and Lucile Packard Foundation

The David and Lucile Packard Foundation is a family foundation guided by the enduring business philosophy and personal values of Lucile and David Packard, whose innovative approach to management helped transform a small electronics shop in their garage into one of the world's leading technology companies. The Foundation works on the issues its founders cared about most: improving the lives of children, enabling the creative pursuit of science, advancing reproductive health, and conserving and restoring the earth's natural systems. In the Conservation and Science Programme, grant-making is focused on ocean and land conservation, climate-change mitigation and scientific research. The Foundation invests in action and ideas that conserve and restore ecosystems while enhancing human well-being. It supports public policy reforms, changes in private-sector practices and scientific activities to develop essential knowledge and tools for addressing current and future priorities.

About California Environmental Associates

Since 1984 California Environmental Associates (CEA) has worked at the nexus of markets, policy and science to address environmental challenges in California, the United States and around the world. CEA helps strengthen the philanthropic community by designing, managing, supporting and evaluating environmental grants and investments. CEA helps foundations and individual donors with both short-term projects and long-term engagements. Its expertise includes climate change, energy policy, fisheries and aquaculture, land preservation, sustainable agriculture, air quality and chemical and waste management. CEA draws upon its deep knowledge of the environmental challenges facing philanthropists as it provides tactical and strategic advice to its clients.

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Acknowledgements

The following experts, researchers, country analysts and specialists contributed to this report. We thank them for their contributions.

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Executive summary

Coastlines and oceans are among the world's most fragile ecosystems, but they also serve as natural assets that can spur growth and build economies. Successfully managing economic and living resources requires a robust framework that protects the public good while acknowledging the importance of sustainable private-sector investment. But as a report from The Economist Intelligence Unit (EIU) on the "blue economy" notes, the landscape for investing in oceans is in a state of flux.[1] So too is the environment surrounding coastal governance, where preserving nature can sit uncomfortably next to private-sector efforts to make the most of energy, land, fisheries and other forms of natural capital. In response, governments throughout the world are establishing integrated coastal management practices that take into account the views of the private sector while ensuring sustainable practices.

To understand the state of play in coastal governance, the EIU measured the extent of governmental regulation and management across 20 key ocean economies, selected on the basis of the importance of coastlines to their economies and on data availability (see Methodology appendix for a more complete description). This first-of-its-kind assessment of coastal governance identifies best practices and areas for improvement in two fundamental categories (policy and institutional capacity; the business environment for coastal activities) and four "asset" categories (water quality; minerals and energy; land; and living resources). The key findings are:

- **The majority of countries have made a good start towards effective coastal governance, but all still need work.** Most countries score in the top half of the index (see chart 1 and figure 1), suggesting that governments have taken initial steps to balance the needs of the environment and economic development. At the same time, no country is perfect, and none scores highly in all six categories. For example, a country that performs well in environmental protection but ignores the input of the private sector is failing because it is not using all of the available resources to strike a proper balance in coastal governance.

- **Democratic countries with inclusive policymaking lead the way.** The correlation between the overall coastal governance score and the EIU's Democracy Index[2] is 0.77, suggesting that participatory inclusion in decision-making and accountability may contribute to better policies in this area (see chart 2). New Zealand ranks first in the Coastal Governance Index, followed by the United States. These countries score well in each of the six index categories, highlighting the need to

1 "Investing in the blue economy: Unlocking new value from the oceans", EIU, 2015.

2 The EIU's Democracy Index is a leading measure of the state of democratic governance and political participation in 167 countries.

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Chart 1.
Coastal Governance Index scores

have a well-rounded approach to coastal governance. Top countries successfully balance the needs of environmental protection and sustainable development.

● **Emerging markets struggle to keep up.** The correlation between the overall coastal governance score and economic development—measured as GDP per capita in US dollars in purchasing power parity (PPP) terms in 2014—is 0.77, suggesting that richer countries have better coastal governance policies on average (see chart 3). The correlation would have been even higher had Russia been excluded. Russia has a higher GDP per capita than about half the countries in the index, yet it comes last in three of the six categories and is last overall.

Figure 1.
Overall score rankings

Rank / 20		Score / 100	Rank / 20		Score / 100
1	New Zealand	86	=10	Chile	67
2	United States	85	12	China	61
3	France	82	13	Mexico	60
4	Spain	80	14	Philippines	59
5	Norway	79	=15	Indonesia	57
6	Japan	78	=15	Vietnam	57
7	Canada	76	17	India	56
8	South Korea	72	18	Peru	55
9	South Africa	68	19	Nigeria	50
=10	Brazil	67	20	Russia	42

Source: The Economist Intelligence Unit

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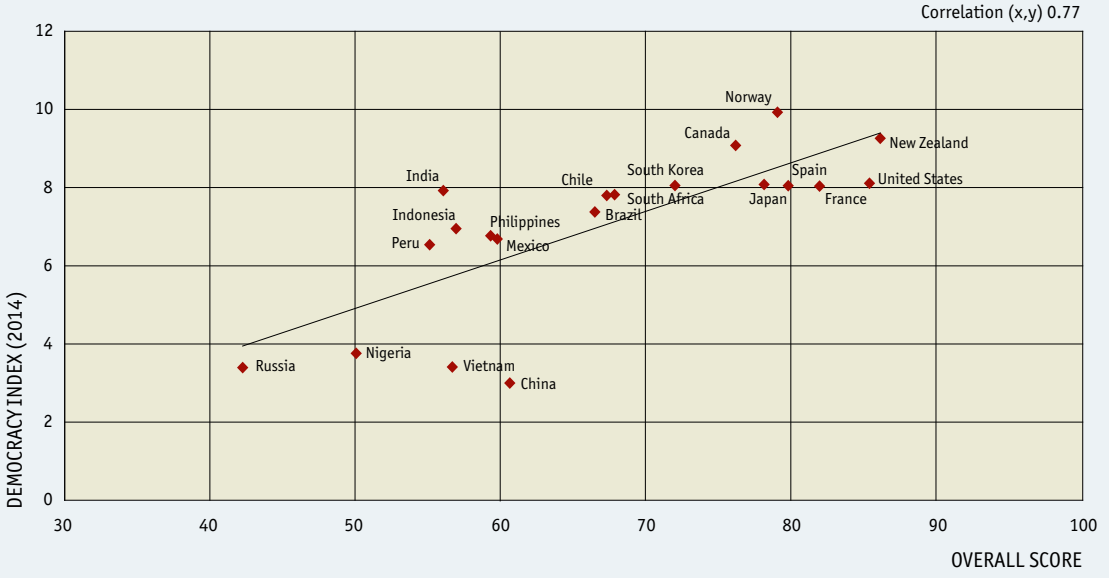
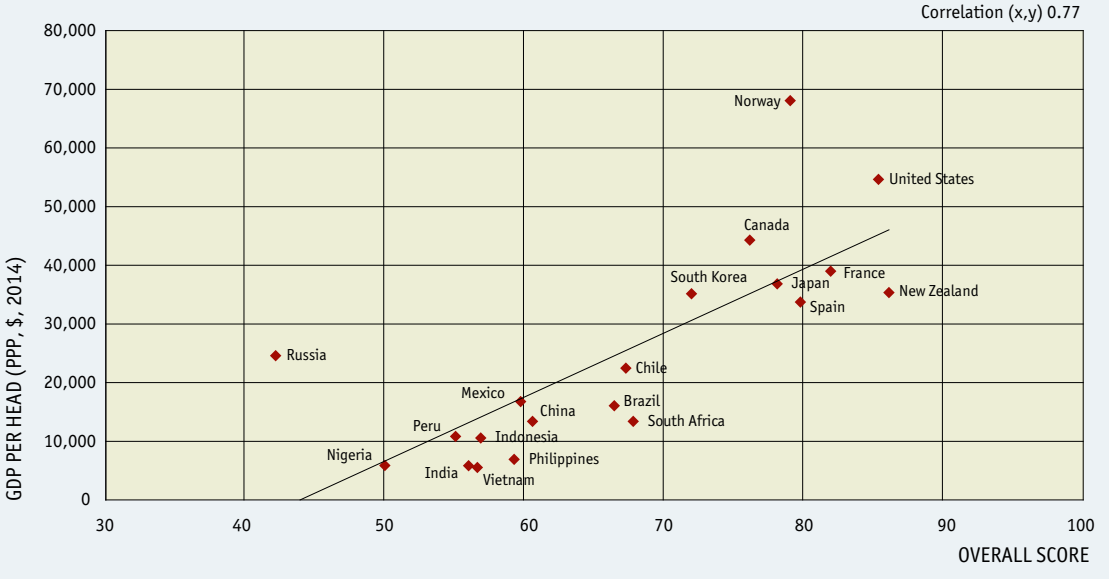
Conversely, some countries that are poorer than Russia perform better. For instance, Chile (which ranks 10th overall) does well thanks to strong scores for water quality (where it is tied for 3rd place) and living resources (8th). Brazil (tied for 10th) also ranks highly relative to its income level owing to strong scores in the minerals and energy category (where it is tied for 6th). The Philippines (14th overall) benefits from a strong score in the policy and institutional capacity category (7th).

Chart 2
Correlation between overall score in the Coastal Governance Index and the EIU's Democracy Index



Source: The Economist Intelligence Unit

Chart 3
Correlation between overall score in the Coastal Governance Index and GDP per capita (PPP in US$, 2014)



Source: The Economist Intelligence Unit

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● **Countries that have strong institutional support for coastal governance fare better overall than the ones that do not.** The high correlation (0.75) between category one and overall scores suggests that countries with well-developed regulatory frameworks around coastal management and marine spatial planning, and which have formally committed to transparency in rent distribution, are more likely to outperform countries with a weaker coastal management foundation. This shows the need for a pre-existing, comprehensive and rigorous operating framework.

● **Lessons for the future.** Emerging markets perform inconsistently, but they are also strong in certain aspects of coastal governance. For example, China is ranked 5th in land policies and Nigeria 3rd in minerals and energy. However, leading countries show that it is fundamental to have integrated policies that are well balanced across all areas. Such an approach must include environmental safeguards, but must also support sustainable business interests. China, for instance, scores well in policy and institutional capacity (tied for 8th) but fares poorly in protection of living resources (20th), suggesting that policies are not necessarily implemented in practice. ■

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Introduction

Good coastal governance requires a balance between economic growth and sustainability that takes into account the views of multiple stakeholders. Coastal areas are subject to competing interests for a number of reasons. Not only do many people choose to live on the coast or visit as tourists, but coastal areas are also a source of revenue-generating industries such as shipping, fishing and mining as well as oil and gas. In emerging markets, fisheries alone can account for up to 5-10% of GDP.[1]

Balancing the competing interests of this diverse set of stakeholders can be difficult. An effective coastal governance policy must consider environmental protection and the social goods that arise from it, while respecting sustainable business practices—in effect, striking a balance between economic development and conservancy. Good governance of coastal areas must therefore take a multi-stakeholder approach, in which competing interests are accounted for in a transparent manner.

This approach is similar to the arguments in a discussion paper from The Economist Intelligence Unit (EIU) regarding the untapped business potential of the oceans.[2] It highlights that oceans represent a new economic frontier for growth, development and investment, while also noting that previous expansions into new frontiers have often come at the expense of the environment. A new report from the EIU on the "blue economy" also describes the landscape for investing in oceans as being in a state of flux because of a lack of international standards.[3] Hence, efforts to track the sustainable development of oceans have recently surfaced, such as the Ocean Health Index, a quantifiable assessment of the capacity of the oceans to deliver benefits and resources sustainably.[4]

Coastal areas deserve the same recognition. There is, however, no global standard in this area either, and countries are pursuing their own initiatives, without much oversight. For instance, a key obstacle to assessing the environment for coastal governance is whether policies are actually being implemented.

Taking such challenges into consideration, the EIU measured the extent of government regulation and management across 20 key ocean economies to assess the state of play in the environment for coastal governance. The country list was determined by reviewing a number of key metrics, including global catch production; size of the economy; length of coastline; oil and gas production; regional representation; and level of economic development.

This first-of-its-kind assessment of coastal

1 *Integrated coastal area management and agriculture, forestry and fisheries*, Food and Agriculture Organisation of the United Nations, Rome, 1998. http://www.fao.org/docrep/w8440e/w8440e02.htm

2 "Investing in the blue economy: Growth, opportunity and a sustainable ocean economy", EIU, 2015.

3 "Investing in the blue economy: Unlocking new value from the oceans", EIU, 2015.

4 Ocean Health Index 2014. http://www.oceanhealthindex.org/

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Defining coastal governance

This research covers the coastal zone and, where appropriate, the exclusive economic zone (EEZ) of each country. The World Bank defines the coastal zone as "the interface where the land meets the ocean, encompassing shoreline environments as well as adjacent coastal waters".[1] We define "good governance" as governance that balances private investment's interests and social and environmental concerns in coastal areas.

1 Jan C Post and Carl G Lundin, *Guidelines for integrated coastal zone management*, World Bank, August 1996.

governance finds that rich countries lead the way. New Zealand ranks first, followed by the United States. These countries do well because of strong scores in each of the six categories underpinning the overall index, thus highlighting the need to have a well-rounded approach to coastal governance. Specifically, good governance requires consideration of private-sector interests alongside environmental and social concerns in order to be successful. At the same time, the distribution of scores per quartile, as shown in chart 1 indicates that all countries, despite having established some conditions for good coastal governance, have room for improvement.

The remainder of this report outlines key trends, the reasons why some countries are successful, and areas for potential improvement. The index is made up of two foundational categories (policy and institutional capacity and the business environment for coastal activities), which measure whether countries have a basic framework in place to address coastal governance. We also examine four asset categories (water quality; minerals and energy; land; and living resources), which measure the key activities undertaken by a wide range of stakeholders. Chart 4 provides a graphical representation of the index framework. ■

Chart 4
An overview of the categories and indicators comprising the CGI

	Foundational categories
1)	POLICY AND INSTITUTIONAL CAPACITY
1.1)	Coastal management policy and strategy
1.2)	Presence of established institution(s)
1.3)	National strategy to adapt to climate change
1.4)	Maritime Spatial Planning
1.5)	Stakeholder engagement
1.6)	Extractive industries transparency
1.7)	Adoption of the United Nations Convention on the Law of the Sea (UNCLOS)
2)	BUSINESS ENVIRONMENT FOR COASTAL ACTIVITIES
2.1)	Ease of doing business
2.2)	Corruption perception
2.3)	Effectiveness of dispute resolution mechanisms
2.4)	Quality of coastal infrastructure

The coastal goverance index

	Asset categories
3)	WATER QUALITY
3.1)	Agency
3.2)	Regulatory standards for water pollution
3.3)	Monitoring and enforcement
4)	MINERALS AND ENERGY
4.1)	Permitting and licensing
4.2)	Monitoring and enforcement
4.3)	Risk mitigation
5)	LAND
5.1)	Prevalence of coastal protected areas
5.2)	Environmental impact of coastal development
5.3)	Government commitment to sustainability in coastal tourism development
5.4)	Natural disaster risk mitigation
6)	LIVING RESOURCES
6.1)	Fisheries governance and management effectiveness
6.2)	Protection for marine/coastal species
6.3)	Ballast water treatment

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Index results

Foundational categories

The Coastal Governance Index (CGI) is comprised of six categories, two of which are foundational categories. The foundational categories underscore the point that countries must have a certain set of standards in place in order to succeed in other areas. Hence, these two categories measure whether countries have a basic framework in place to address coastal governance with regard to the various environmental assets for which there are competing uses.

1. Policy and institutional capacity

This category is comprised of seven indicators and ten sub-indicators related to the policy and institutional capacity of governments with regard to coastal management. It assesses the extent to which a coastal management strategy exists, is implemented and engages different stakeholders in the process. The participation of the private sector in coastal governance planning is important in order to ensure economic development. At the same time, it should not come at the expense of social and environmental degradation. Hence, this category emphasises the point that integrated policies across sectors are vital to ensure good governance of coastal areas and finds that all countries can do more in this regard.

There are essentially two ways in which countries currently attempt to balance competing interests through a multi-stakeholder process. Maritime spatial planning initiatives (see box) focus on risks and opportunities in water resources specifically, while broader coastal management policies are also emerging around the world. In the index, only three countries (Nigeria, Peru and Russia) have no apparent policy guiding coastal management.

Figure 2: Category ranking
1) CAPACITY

Rank / 20		Score / 100
=1	Norway	86
=1	Spain	86
3	United States	85
=4	France	79
=4	Japan	79
6	New Zealand	75
7	Philippines	74
=8	Canada	71
=8	China	71
=8	South Africa	71
=8	Vietnam	71
12	Indonesia	69
13	South Korea	68
14	Brazil	64
15	Mexico	57
16	India	54
17	Nigeria	43
18	Chile	36
19	Peru	32
20	Russia	14

Source: The Economist Intelligence Unit

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Case study

Maritime spatial planning

Maritime spatial planning (MSP) is a tool for improved decision-making, providing a framework for arbitrating between competing human activities and managing their impact on the marine environment. Countries refer to this framework in various ways, including Marine Functional Zoning (China), Marine Bioregional Plans (Australia), Marine Spatial Planning (UN) and Maritime Spatial Planning (European Union-EU), as used in this report. Beyond differences in terminology, however, the objective remains the same: to balance the interests of various sectors and achieve a sustainable use of marine resources.[1]

It's a growing trend. In July 2014 the European Parliament and the Council adopted legislation to create a common framework for maritime spatial planning in Europe.[2] In the index, 11 countries have a domestic legal or regulatory basis for maritime spatial planning, whereas nine have none. However, the level of implementation varies, as illustrated by the research.

In France (4th in this category), planning is under way to incorporate MSP based on the EU Directive. In Spain, the Act on Protection of the Marine Environment already lays out the general principles and procedures for planning the coastal environment and transfers the EU's Marine Strategy Framework Directive into domestic legislation.[3] In practice, however, the Ministry of Agriculture, Food and the Environment, which is the designated lead agency, has not moved ahead with the actual implementation of MSP. In the meantime, Norway, which is not part of the EU, has developed and approved three plans for its entire exclusive economic zone, illustrating progress well beyond that mandated by the EU and setting the standard for others to follow in this area.

1 European Commission, Maritime affairs website: http://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning/index_en.htm

2 Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0135.01.ENG

3 UNESCO Marine Spatial Planning Initiative, Spain: http://www.unesco-ioc-marinesp.be/msp_around_the_world/spain

Countries that do well have typically added to their policies by creating an Integrated Coastal Zone Management (ICZM) strategy, which requires an interdisciplinary and multi-sectoral approach for the sustainable utilisation of resources. ICZM uses the participation and co-operation of all stakeholders to assess the societal goals in a given coastal area and takes action towards meeting those objectives. This is exemplified by Spain, which is tied for first place in this category (with Norway). Spain has a domestic coastal management policy, which includes common goals in coastal management, such as protecting the environment and balancing competing uses.[1] This policy has subsequently led the country to adopt an ICZM strategy.[2]

However, such efforts are not limited to developed countries. In 2009 Vietnam (tied for 8th place in this category, although just joint 15th overall) issued the first legal document related to marine integrated management.[3] It lays out the principles for information collection, planning, decision-making, management and monitoring of implementation, and also calls for co-ordination among the various public and private stakeholders.

1 Law on the Protection and Sustainable Use of the Coast, Spanish Presidency Office , May 30th 2013. http://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-5670

2 *Integrated Coastal Zone Management in Spain*: http://ec.europa.eu/ourcoast/download.cfm?fileID=1323

3 Decree No.25/2009/ND-CP on the integrated management of natural resources and environmental protection of the sea and islands, Government of Vietnam, Hanoi, March 6th 2009. http://sxsh.vn/en-US/Document/Details.aspx?ID=119

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2. Business environment for coastal activities

This category comprises four indicators and nine sub-indicators related to the business environment and is the only category in the index focused exclusively on the interests of the private sector. Specifically, the category assesses the environment for private-sector activities in coastal areas, such as the ease of doing business, corruption perception, effectiveness of dispute resolution mechanisms, and quality of coastal infrastructure.

The correlation between the category score for the business environment for coastal activities and GDP per capita in terms of purchasing power parity (PPP) in US dollars in 2014 is 0.85. This suggests a strong link between a solid investment climate and economic growth. In turn, higher incomes are linked with better performance in the index. The correlation between the overall coastal governance score and GDP per capita (PPP in US dollars in 2014) is 0.77, suggesting that richer countries have better coastal governance policies, on average. These correlations underscore the assumption underpinning the CGI that the interests of the private sector must be taken into account in coastal management. A conducive business environment is essential to attract investments, create jobs and support economic development. However, such efforts must be balanced against public concerns and environmental protection, which is what makes good governance in this area complex.

Canada outperforms in this category, ranking first, although it is only 7th in the overall index. In part, the reason is that the country is the easiest place in which to do business, scoring 7.3 on a scale of 0 to 9 in the CGI indicator (which is informed by the EIU's Business Environment Rankings.), while the United States is a close second (see box). Canada also scores well in other business indicators in this category, such as in the assessments of fairness of the judicial process and enforceability of contracts (a complete list of indicators and their sources can be found in the Appendix).

Conversely, countries that do not do well in this category suffer from low scores in these indicators and are often victims of perceived corruption, such as Russia and Nigeria, which rank last in the category. Hence, in order to improve in this area, these countries will need to start by improving transparency and accountability in order to regain confidence among investors. Additionally, all countries in the index would benefit from improved infrastructure to support their business environment. In the port infrastructure sub-indicator, for example, New Zealand, Norway, Spain and the United States lead the way, although they have far from perfect scores. Conversely, Nigeria and particularly Brazil fare poorly on this measure, indicating the need for better infrastructure to support private-sector development in coastal areas.

Figure 3: Category ranking

2) BUSINESS ENVIRONMENT FOR COASTAL ACTIVITIES

Rank / 20		Score / 100
=1	Norway	86
=1	Spain	86
3	United States	85
=4	France	79
=4	Japan	79
6	New Zealand	75
7	Philippines	74
=8	Canada	71
=8	China	71
=8	South Africa	71
=8	Vietnam	71
12	Indonesia	69
13	South Korea	68
14	Brazil	64
15	Mexico	57
16	India	54
17	Nigeria	43
18	Chile	36
19	Peru	32
20	Russia	14

Source: The Economist Intelligence Unit

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Case study

The strengths and weaknesses of the United States

Coastal governance is naturally very important in the United States, where more than half the population resides along the coast,[1] and the country's exclusive economic zone (EEZ) is the largest in the world, exceeding its land area.

Therefore, it is unsurprising that the United States has established a strong business environment for coastal areas. The United States is the second-easiest place in which to do business in the Coastal Governance Index, where it scores 7.2 on a scale of 0 to 9, only marginally surpassed by Canada, and it is ranked 4th in the business environment category overall.

A study in microcosms, the United States is particularly strong in the living resources category (see category results for more information), as well as policy and institutional capacity, where it is ranked 3rd, and minerals and energy, where it is tied for 3rd place.

The country's success can partly be attributed to its domestic coastal management policy in the form of the Coastal Zone Management Act (CZMA) of 1972, which established a "national policy to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations", while "giving full consideration to ecological, cultural, historic, and aesthetic values as well as the needs for compatible economic development". Further, the country's Coastal Zone Management Programme (CZMP) is the integrated strategy to implement the coastal management policies across sectors in the United States, which is the responsibility of the Ocean and Coastal Resource Management (OCRM). With respect to fisheries, the implementation of the Magnuson-Stevens Fishery Conservation and Management Reauthorisation Act of 2006, which requires the rebuilding of overfished stocks, has showcased the country's commitment to better management.

At the same time, the United States also shows weaknesses in coastal governance, underscoring the point that no country is perfect. For instance, there is no legal or regulatory basis for maritime spatial planning (MSP), despite the fact that the president, Barack Obama, signed an executive order in 2010 directing federal agencies to implement the recommendations of the Interagency Ocean Policy Task Force (IOPTF) under the guidance of a new National Ocean Council (NOC). This means that the United States receives only partial credit in the MSP indicator in the index. The country is also relatively weak in the water category (where it ranks 5th) owing to relatively low scores on restrictions on "Dirty Dozen" Persistent Organic Pollutants and wastewater treatment. This highlights the fact that even a leading country could do more to maintain a balanced approach to competing interests.

1 "The Benefits of Healthy Coastal Habits", National Oceanic and Atmospheric Administration (NOAA). http://www.noaa.gov/features/resources/rae.html

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Asset categories

The two foundational categories are necessary to provide the right framework for coastal governance. But countries also need to ensure that those policies are properly implemented across issues related to coastal management. Hence, the index also comprises four asset categories (water quality; minerals and energy; land; and living resources), which assess how key resources are governed.

3. Water quality

This category is comprised of three indicators and six sub-indicators related to the management and preservation of water quality. In particular, it assesses whether there is a national agency in charge of freshwater pollution controls, regulatory standards and enforcement. Such indicators are important to develop a proper balance between commercial interests (such as farming), human health, safety, and the protection of the environment.

There are two types of water pollution: point source and nonpoint source (NPS). Nonpoint source pollution comes from diffuse sources, such as rainfall or agricultural runoff. Given the difficulties of tracking NPS, no indicator was included in this regard. Point source pollution, meanwhile, comes from a single, identifiable source, such as a drainage pipe. This is a common way for industrial waste and sewage to be discharged into rivers and oceans.

In the index, all countries have regulations that set standards for point source pollution. Broadly speaking, no country fared poorly in this category in terms of relative scores. In part, this is attributable to a high level of transparency in monitoring standards at a national level.

Although water is an area in which subnational entities usually have substantial control, most countries also have a national agency in charge of setting minimum standards for pollution control of freshwater. That is important, since transparency and data collection also improve accountability and allow sub-national authorities to be stricter if they see a need. In the index, all countries have such an agency at the national level, with the exception of Canada.

In France, which ranks first in this category, the National Agency for Water and Aquatic Environments (ONEMA) conducts water environmental controls, monitors its use and helps

Figure 4: Category ranking

3) WATER QUALITY

Rank / 20		Score / 100
=1	France	83
=1	New Zealand	83
=3	Chile	82
=3	Japan	82
5	United States	80
6	Spain	79
7	South Korea	78
=8	Mexico	77
=8	Norway	77
10	Peru	76
=11	Brazil	75
=11	India	75
13	Vietnam	74
14	Indonesia	73
15	South Africa	71
16	Canada	67
17	China	66
18	Nigeria	62
19	Philippines	61
20	Russia	57

Source: The Economist Intelligence Unit

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to prevent degradation. ONEMA also provides technical support for better public policy in this area, based in part on water data. In line with the EU Water Framework Directive (2000/60/EC), coastal water quality is monitored several times per year in France.

Not all developed countries fare well in this category. Owing to the lack of a national office, Canada is ranked 16th behind Brazil, India, Indonesia, Vietnam and South Africa. Conversely, some emerging markets do well. Chile is 3rd in this category, thanks to a national framework that includes frequent data collection. Specifically, pollution controls for various water resources, including freshwater, are set at the national level by the president and monitored by the Ministry of the Environment.

Despite such progress, neither Chile nor any other country receives a perfect score with regard to regulations that restrict or ban the "Dirty Dozen" Persistent Organic Pollutants, a set of 12 distinct chemicals that should be eliminated or restricted under the Stockholm Convention, effective from May 2004. New Zealand and Canada receive the highest scores in this indicator, while Russia is last.

4. Minerals and energy

The minerals and energy category is comprised of three indicators and nine sub-indicators related to the exploitation and use of minerals and the production of energy, in particular oil and gas, and including issues such as permitting, licensing, monitoring and enforcement in this regard. Extractive industries are an important sector in the marine and coastal environment, in which commercial interests must be carefully balanced against potential environmental impact.

This topic is likely to increase in importance as oil and gas production in oceans and coastal areas

Figure 5: Category ranking

4) MINERALS AND ENERGY

Rank / 20		Score / 100
=1	Japan	92
=1	Norway	92
=3	Canada	86
=3	Nigeria	86
=3	United States	86
=6	Brazil	82
=6	New Zealand	82
=6	South Africa	82
9	South Korea	81
10	China	76
11	Chile	75
12	India	74
13	Spain	72
14	Philippines	71
=15	Mexico	67
=15	Peru	67
=15	Russia	67
18	France	64
19	Vietnam	57
20	Indonesia	47

Source: The Economist Intelligence Unit

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will become more common. For instance, a 2011 report[1] estimated that offshore capital expenditure in the United States alone would rise from US$8bn in 2010 to US$23bn in 2015, reflecting the global trend to seize on the economic opportunities of offshore drilling. At the same time, there is a need to balance this against strong environmental and social protection, as demonstrated by the 2010 Deepwater Horizon oil spill (also referred to as the British Petroleum-BP oil spill), when 11 people lost their lives and 4.9m barrels of oil leaked into the Gulf of Mexico. Beyond the environmental impact, the incident has cost BP an estimated US$42.2bn as of 2013.

Good governance of minerals and energy exploration and production is necessary to maintain investment while also ensuring safeguards. This calls for a transparent process in which potentially harmful projects are properly evaluated up-front. Hence, environmental impact assessments (EIAs) are emerging as an important formal process used to predict the environmental consequences of proposed developments.

In the index, all countries demand such a process for both oil and gas and mining and minerals exploration. France and Spain, however, are the only countries not to mandate on-site inspections to ensure that proper procedures are followed, which is also part of the reason why they fare poorly here (ranking 13th and 18th respectively).

Conversely, Nigeria is tied for 3rd in this category because it has several policies in place to ensure proper planning in relation to minerals and energy, although it should be noted that the index does not assess their effectiveness. For instance, the Environmental Impact Assessment Decree of 1992 requires environmental impact assessments on both mining and oil and gas projects in Nigeria. Similarly, the Nigerian Minerals and Mining Act of 2007 and the Guidelines on Mineral Titles Application describe the process to explore and exploit mineral resources, including the steps for obtaining permits, licences, leases and the process for environmental impact assessments. Nigeria is also a signatory of the Extractive Industries Transparency Initiative (EITI), a global standard for the governance of a country's oil, gas and mineral resources.

Meanwhile, Japan is tied for 1st place in this category (with Norway) and New Zealand is 6th, in part because they do not have significant oil and gas and mining industries compared with other countries in the index.

1 "The State of the Offshore U.S. Oil and Gas Industry: An in-depth study of the outlook of the industry investment flows offshore", Quest Offshore, 2011. http://www.api.org/~/media/Files/Policy/Exploration/Quest_2011_December_29_Final.pdf

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5. Land

This category identifies policies related to the shorelines. It is comprised of four indicators and five sub-indicators and includes measurements of the coastal governance environment for the tourism and real estate (residential and commercial) industries, in particular the environmental impact of such development. As such, the category highlights the importance of striking a balance between the public use of coastal areas and economic development.

This is the only category in which New Zealand (which ranks first in the overall index) is the outright leader. Notably, it is one of only six countries to score the maximum number of points in the indicator measuring the prevalence of terrestrial protected areas, a proxy to assess the protection of coastal areas. The score here is based on the target set by the Convention on Biological Diversity, according to which at least 17% of terrestrial and inland water should be protected by 2020.

In addition, environmental impact assessments are required for coastal development projects by the New Zealand Resource Management Act. It specifies that all persons managing the use, development and protection of natural and physical resources shall recognise the preservation of the natural character of the coastal environment. Therefore, the Act stipulates that applications for development include an assessment of the activity's effects on the environment and a description of the mitigation measures (including safeguards and contingency plans) to be undertaken to prevent or reduce actual or potential effects.[2]

In fact, risk mitigation strategies are crucial, and most countries have such a proactive plan of action. In the index only five countries fail to do so. One of these is Norway (5th overall), which contributed to its low ranking of 17th in this category, behind Indonesia, among others.[3] Although surprising at first glance, it also makes sense because Norway has been relatively shielded from major natural disasters such as typhoons and tsunamis. Conversely, the 2004 Asian tsunami killed at least 130,000 people in Indonesia alone, highlighting the need for greater risk-mitigation efforts in this area.

A strong performer in this category is China (5th here, although only 12th overall). The country's legal framework requires environmental impact assessments for coastal development projects on the basis of Article 43 of the Marine Environment Protection Law of the People's Republic of China, which stipulates that such projects shall be subject

Figure 6: Category ranking

5) LAND

Rank / 20		Score / 100
1	New Zealand	96
2	France	92
3	Spain	80
4	United States	79
=5	China	78
=5	Peru	78
7	Japan	77
=8	Indonesia	76
=8	Philippines	76
=10	Canada	67
=10	South Africa	67
12	Chile	64
=13	India	63
=13	South Korea	63
15	Vietnam	62
16	Nigeria	61
=17	Mexico	53
=17	Norway	53
19	Brazil	50
20	Russia	22

Source: The Economist Intelligence Unit

2 Resource Management Amendment Act 2013. See New Schedule 4 of Resource Management Act 1991. http://www.legislation.govt.nz/act/public/2013/0063/latest/DLM4921910.html

3 The natural disaster risk mitigation indicator contains only one sub-indicator on whether countries have a strategy for risk mitigation.

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to the examination and approval of the administrative department in charge of environmental protection and that applicants must seek the opinions of the departments in charge of maritime affairs and fisheries as well as the environment protection department of the Armed Forces.[4] China's legal framework also authorises the relevant authorities to make on-site inspections to ensure proper implementation. According to the Marine Environment Protection Law of the People's Republic of China, departments have the power to conduct marine environment supervision. Those inspected must report the situation accurately and provide the necessary data, while the relevant inspection departments are obliged to keep the technical and business details of those inspected confidential.[5]

Conversely, a lack of inspection is one reason why Brazil (19th) and Russia (20th) fare poorly in this category. Another reason is that they also lack a proper strategy for risk mitigation. This suggests that there is room for improvement even at the most fundamental levels of environmental safety.

6. Living resources

This category comprises three indicators and four sub-indicators on the coastal management of living resources, including fisheries and wildlife. Sustainable business practices, particularly as they relate to fishing, are a key component of long-term environmental stability.

This theme clearly overlaps with the "blue economy" arguments presented in the EIU's 2015 discussion paper, *Investing in the blue economy*. As countries increasingly look to the ocean as a source of growth and investment, the terms "blue economy" and "blue growth" are emerging as part of a new economic development strategy. This

Figure 7: Category ranking

6) LIVING RESOURCES

Rank / 20		Score / 100
1	United States	97
2	New Zealand	94
3	France	91
4	Spain	83
5	Norway	79
6	Brazil	78
7	Canada	77
8	Chile	71
9	South Korea	70
=10	Japan	62
=10	Russia	62
12	South Africa	60
13	Mexico	51
=14	Indonesia	37
=14	Peru	37
16	Vietnam	34
=17	India	31
=17	Nigeria	31
=17	Philippines	31
20	China	25

Source: The Economist Intelligence Unit

4 The Marine Environment Protection Law of the People's Republic of China. National People's Congress, December 25th 1999. http://www.mlr.gov.cn/mlrenglish/laws/200710/t20071012_656329.htm

5 Ibid.

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implies a longer-term vision, in which economic opportunity is balanced by responsible investment and sustainable ocean practices.

In the index, only one country (Japan) is given partial credit in the indicator on adequate protection for threatened species and populations. This reflects Japan's lack of a specific reference to the protection of sea turtles and mammals in its protection framework. However, only one-half (ten) of the countries surveyed have any marine protected areas at all, or else these areas cover less than 5% of the total marine area, indicating that much remains to be done to protect living resources in coastal areas.

Strong fisheries management is one of the most important elements of effective coastal governance. It not only contributes to long-term economic growth but also plays a key role in providing food for the global population. In brief, effective management means putting measures in place to prevent overfishing, but more importantly, to reduce fishing pressure when stocks become depleted. In practice, this means reducing the amount of fishing pressure when necessary and appropriately enforcing the rules and regulations that have been created. These actions depend on an explicit fisheries management plan, collecting information annually on what is caught, and performing assessments on a sufficiently frequent basis to understand the status of fisheries.

Unfortunately, little information is publicly available on the status of fisheries management globally. For the fisheries governance component of the living resources category, the Coastal Governance Index draws on new research conducted by scientists from the University of Washington. Their research features an independent survey that provides an initial rapid assessment of fisheries management and governance effectiveness stock by stock in the leading fishing countries of the world. Based on contributions from experts in the industry, the survey assesses each country on a fishery-by-fishery basis.

The results show clear opportunities for improvement in four key dimensions of fisheries governance: research and assessment; the management approach to limit fishing pressure; enforcement; and the socioeconomic aspects of fisheries management. Top-ranked countries for their current effectiveness of fisheries management systems in regulating fishing pressure include the United States, Norway, Russia, Canada, New Zealand and South Africa. High-scoring countries generally have policies in place to limit overfishing, apply robust science to decision-making and have harvest control rules in place that lead managers to modify regulations in response to changing conditions. All of these countries benefit from relatively temperate waters with large single-stock species that are relatively easier to manage than those in many tropical waters.

Among emerging markets, the three countries that perform relatively well in the survey are South Africa, Chile and Peru. South Africa has well-regulated industrial fleets and is in the process of modifying its small-scale fisheries policies to benefit previously disenfranchised coastal communities. Similarly, Chile is often held up as an example of a country with a well-crafted artisanal fishing policy that empowers local communities to develop their own management strategies for high-value shellfish.

The lowest-ranking countries—Indonesia, Brazil and China—score relatively weakly across all categories, and particularly in management and enforcement. As such, it is no surprise that these countries would gain considerable biological and economic benefits if management were to be improved.

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Conclusion

The Coastal Governance Index finds that the state of play towards the integrated management of coastal areas around the world, as measured in 20 key ocean economies across the six thematic categories described above, is uneven. Developed countries are doing relatively well, but at the same time there is room for improvement across the board. Given the importance of integrated policies encompassing multiple stakeholders, it means that if a country fails in one area, it still fails overall. Hence the index takes a holistic approach to incorporate the business environment in addition to environmental and social concerns. It advocates for good governance through a transparent and accountable approach that balances competing interests.

The potential opportunities are vast. Building a consensus towards robust coastal governance can save the environment and enhance the public good for residents and tourists alike, while private-sector interests can enhance a country's economic and sustainable development. One example of the need for a balanced approach is the fisheries industry, an area of great importance to the livelihood of those working in it and for securing food for the global population, which must be managed properly to ensure long-term productivity.

But there are many challenges. No country scores perfectly in any of the six categories. This indicates that more can be done in all areas of coastal governance. Emerging markets are inconsistent, while developed countries fare better in having a well-balanced approach. However, all countries could do more to provide an integrated multi-stakeholder environment for coastal governance at the national level. In particular, scores in the water quality and policy and institutional capacity categories of the index are weak overall, especially when compared with those in the land and living resources categories.

Moving forward, these are just some of the issues that countries must address. The evolving nature of coastal areas—from the development of shorelines to fishing and oil and gas exploration projects in adjacent waters—only mean that the topic will increase in importance. To provide for sustainable development that is conducive to the interests of all stakeholders, policymakers would do well to make integrated coastal governance a priority. ■

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Appendix: Methodology

1. Summary

The Coastal Governance Index framework draws on the expertise of an expert panel which convened in January 2015. The panel was comprised of eight specialists representing various aspects of coastal governance regulation and management, ranging from policy and conservation to pollution and seafood markets. These experts discussed key coastal governance topics and their suitability for inclusion in the indicator framework that forms the foundation of the Coastal Government Index. Their

Coastal Governance Index indicator framework

Foundational categories

1.	**Policy and institutional capacity**
1.1.	Coastal management policy and strategy
1.2.	Presence of established institution(s)
1.3.	National strategy to adapt to climate change
1.4.	Maritime spatial planning
1.5.	Stakeholder engagement
1.6.	Transparency in rent distributions
1.7.	Adoption of the United Nations Convention on the Law of the Sea
2.	**Business environment for coastal activities**
2.1.	Ease of doing business
2.2.	Corruption perception
2.3.	Effectiveness of dispute resolution mechanisms
2.4.	Quality of coastal infrastructure

Asset categories

3.	**Water quality**
3.1.	Agency
3.2.	Regulatory standards for water pollution
3.3.	Monitoring and enforcement
4.	**Minerals and energy**
4.1.	Permitting and licensing
4.2.	Monitoring and enforcement
4.3.	Risk mitigation
5.	**Land**
5.1.	Prevalence of coastal protected areas
5.2.	Environmental impact of coastal development
5.3.	Government commitment to sustainability in coastal tourism development
5.4.	Natural disaster risk mitigation
6.	**Living resources**
6.1.	Fisheries governance and management effectiveness
6.2.	Protection for marine/coastal species
6.3.	Ballast water treatment

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input, combined with feedback from the funding organisations and research by The Economist Intelligence Unit (EIU), resulted in 23 quantitative and qualitative indicators across six categories.

Definition of coastal areas and good coastal governance

For the purposes of the index and this report, we define coastal areas as "the interface where the land meets the ocean, encompassing shoreline environments as well as adjacent coastal waters".[1] We define "good governance" as governance that balances private investment's interests and social and environmental concerns in coastal areas.

1 Jan C Post and Carl G Lundin, *Guidelines for integrated coastal zone management*, Default Book Series, August 1996.

2. Categories and scoring criteria

The six categories comprising the framework include two foundational categories and four "asset" categories. Although this structure is not relevant for the index's results, it does help the reader to understand the concept behind the index. The foundational categories assess the two key pillars of coastal management. Coastal governance requires sound and distinct institutions that set the basis for coastal governance (Category 1: Policy and institutional capacity) and a friendly business environment to attract and sustain the private sector in coastal areas (Category 2: Business environment for coastal activities).

Coastal areas have a range of resources, and this abundance is at the root of competing usage issues, conservation and social concerns. This index identifies four of these assets: water quality (Category 3), minerals and energy (Category 4), land (Category 5) and living resources (Category 6).

The EIU led the research on all the categories with the exception of Category 6. For the living resources category, California Environmental Associates provided data from an ongoing study by scientists at the University of Washington to fill in indicator 6.1 on fisheries governance and management effectiveness.

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I. Policy and institutional capacity
This category is comprised of seven indicators and ten sub-indicators related to the policy and institutional capacity of government with regard to coastal management. It assesses the extent to which a coastal management strategy exists, is implemented and engages stakeholders.

Indicator	Sub-indicators and scoring schemes
1.1. Coastal management policy and strategy	1.1.1 Is there a domestic coastal management policy?
	0=No
	1=Yes
	A policy is a course or principle of action adopted or proposed by a government.
	1.1.2 Is there a strategy in place to implement the coastal management policy identified in 1.1.1 across sectors?
	0=No or no coastal management policy was identified in 1.1.1
	1=Yes, but strategy is not integrated across sectors
	2=Yes, integrated strategy is in place
	A strategy refers to the plan of action to implement the coastal management policy. Consider only whether the strategy is integrated across sectors.
	The strategy may call for an Integrated Coastal Zone Management (ICZM) strategy, which is a dynamic, multidisciplinary and iterative process to promote the sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision-making, management and monitoring of implementation.
1.2. Presence of established institution(s)	1.2.1 Is there a national authority(ies) for implementation of the coastal management strategy identified in 1.1.2?
	0= No or no coastal management strategy was identified
	1= Yes, there are multiple entities responsible for the implementation or coordination of implementation of the coastal management strategy identified in 1.1.2 or there is an entity in charge of designing a coastal management strategy
	2= Yes, there is one entity responsible for implementation or coordination of implementation of the coastal management strategy identified in 1.1.2
	The authority or authorities should be noted in the strategy document referred to in 1.1.2.
1.3. National strategy to adapt to climate change	1.3.1 Is there a strategy in place to adapt coastal areas to climate change?
	0=No
	1=Yes
	This question refers to the existence of a national strategy that addresses the coastal impacts of climate change, eg sea level rise, coastal floating. Adaptation refers to any efforts to adapt coastal areas to mitigate these risks.
1.4. Maritime spatial planning	1.4.1 Is there a domestic legal or regulatory basis for maritime spatial planning (MSP)?
	0=No
	1=Yes, there is a legal or regulatory basis at the subnational level or MSP is at the planning stage
	2=Yes, there is a legal or regulatory basis at the national level
	1.4.2 Is there a government entity responsible for maritime spatial planning?
	0=No

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	1=Yes, there is a government entity responsible at the subnational level
	2=Yes, there is a government entity responsible at the national level
1.5. Stakeholder engagement	1.5.1 Do institutions provide citizens with the opportunity to successfully petition government to redress grievances?
	0= No
	1= Some opportunities
	2= Yes
	1.5.2 Does the strategy referred to in sub-indicator 1.1.2 require multi-stakeholder engagement (ie private sector, public sector, third sector and private citizens)?
	0=No
	1=Yes
	The strategy noted in 1.1.2 must specifically address multi-stakeholder engagement.
1.6 Transparency in rents distribution	1.6.1 Has the country adopted EITI standards?
	0=No
	1=Membership has been suspended
	2=EITI candidate country
	3=EITI compliant country
	This is a proxy to assess accountability and transparency in the distribution of benefits from the exploitation of natural resources. The Extractive Industries Transparency Initiative (EITI) is a global standard led by a coalition of governments, companies, investors, civil society organisations and partner organisations to promote openness and accountable management of natural resources. It seeks to strengthen government and company systems, inform public debate and enhance trust.
1.7. Adoption of the United Nations Convention on the Law of the Sea (UNCLOS)	1.7.1 Is the state a party to the United Nations Convention on the Law of the Sea (UNCLOS)?
	0= Not a member
	1= Signed
	2 = Signed and ratified (or action having the same legal effect)

II. Business environment for coastal economic activities
This category is comprised of four indicators and nine sub-indicators related to the business operating environment for developing coastal economic activities. It assesses the attributes for private-sector activities in coastal areas.

Indicator	Sub-indicators and scoring schemes
2.1. Ease of doing business	2.1.1 This indicator will be informed by the EIU's Business Environment Rankings.
	The EIUs business environment rankings quantify the attractiveness of the business environment. The overall score is derived as an unweighted average of ten component category scores. The ratings run from 0 to 9.
	0=Worst environment
	9=Best environment

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2.2. Corruption perception	2.2.1 This indicator will be informed by World Bank's Worldwide Governance Indicators, specifically Control of Corruption (rank).
	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
	0=Lowest control of corruption
	100=Highest control of corruption
2.3. Effectiveness of dispute resolution mechanisms	This is a composite indicator that considers two indicators from the EIU's Risk Briefing.
	2.3.1 Fairness of judicial process: Assess the extent to which the legal process/the courts can be interfered with or distorted to serve particular interests.
	0=Very high degree: The legal process is extremely susceptible to distortion by particular interests
	1=High degree: The legal process is often distorted by particular interests
	2=Moderate degree: The legal process is sometimes distorted by particular interests
	3=Low degree: The legal process is rarely distorted by particular interests
	4=Very low degree: The legal process is entirely independent
	2.3.2 Enforceability of contracts: Assess the risk that contract rights will not be enforced.
	0= Very high: Businesses cannot rely on contractual rights being enforced at all
	1= High: Businesses will often find that contractual rights are not enforced
	2= Moderate: Businesses will sometimes find that contractual rights are not enforced
	3= Small: Businesses can usually rely on contractual rights being enforced
	4=Minimal: Businesses can rely on all contractual rights being enforced by the authorities
2.4. Quality of coastal infrastructure	The EIU uses the quality of port, road and rail infrastructure and electricity supply as a proxy of quality of overall coastal infrastructure. This is a composite indicator based on three indicators from the World Economic Forum's Global Competitiveness Index.
	2.4.1 How would you assess port facilities in your country?
	0=extremely underdeveloped
	6=well-developed and efficient by international standards
	This scale will be adjusted to a 0-6 scale.
	2.4.2 How would you assess the reliability of electricity supply (lack of interruptions and lack of voltage fluctuations)?
	0=not reliable at all
	6=extremely reliable
	This scale will be adjusted to a 0-6 scale.
	2.4.3 How would you assess roads in your country?
	0=extremely underdeveloped
	6=extensive and efficient by international standards
	This scale will be adjusted to a 0-6 scale.
	2.4.4 How would you assess railroads in your country?
	0=extremely underdeveloped

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	6=extensive and efficient by international standards
	This scale will be adjusted to a 0-6 scale.
	2.4.5 To what extent is improved drinking water and sanitation infrastructure accessible in the country?
	The EIU uses the Environmental Performance Index (EPI) indicator on water and sanitation as a proxy of the quality of water infrastructure in coastal areas. This is a composite indicator which includes the percentage of the national population with i) access to sanitation and ii) drinking water. It is not specific to coastal areas.
	0=Lowest access
	100=Highest access

III. Water quality
This category is comprised of three indicators and six sub-indicators related to the management and preservation of water quality. It assesses the coastal management of the water resource and the extent to which it ensures the quality of the asset.

Indicator	Sub-indicators and scoring schemes
3.1. Agency	3.1.1 Is there a national environmental agency responsible for setting freshwater pollution controls?
	0= No
	1= No, but standards are set by regional (state, provincial) bodies/agencies
	2 = Yes
3.2. Regulatory standards for water pollution	3.2.1 Do regulations set water quality standards for point source pollution?
	0= No
	1= Yes
	3.2.2 Do regulations restrict or ban the "Dirty Dozen" Persistent Pollutants under the Stockholm Convention?
	The answer to this question is based on the EPI's indicator on pesticide regulation. This indicator assesses whether countries allow, restrict or ban the "Dirty Dozen" Persistent Organic Pollutants under the Stockholm Convention. The scores run from 0 to 25 based on the EPI methodology.
	0= Less restrictive regulation
	25=Most restrictive regulation
	3.2.3 To what extent is wastewater treated?
	This indicator is based on the EPI's water resources indicator, which tracks the extent to which wastewater from households and industrial sources is treated before releasing it back into the environment. More specifically, it is defined as wastewater treatment level weighted by connection to wastewater treatment rate.
	0=Lowest
	100=Highest rate

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3.3. Monitoring and enforcement	3.3.1 Are data on coastal water quality collected?
	0= There is no data collection or information about data collection publicly available
	1= Data are collected but frequency is unclear
	2= Data are collected at least once a year
	3 = Data are collected more than once per year
	3.3.2 Do regulations establish penalties for violations of water quality standards noted in 3.2.1?
	0= No
	1= Yes

IV. Minerals and energy
This category is comprised of three indicators and nine sub-indicators related to the exploitation and use of minerals and production of energy. It measures the coastal governance environment for the minerals and oil and gas industries.

Indicator	Sub-indicators and scoring schemes
4.1. Permitting and licensing	Are there clear rules for obtaining and maintaining tenure?
	4.1.1 For oil and gas:
	0=No, or information not publicly available
	1=The tenure process is partially described
	2=The tenure process is fully described and publicly available or the oil and gas industry is not a significant economic activity in the country.
	Tenure is the process of leasing and administering oil/gas rights owned by the state/ provincial or national government. For this indicator, researchers should review oil/gas lease rules and regulations, which describe the process for obtaining a lease. Descriptions should include:
	• the entity responsible for evaluating applications
	• associated fees
	• required documentation for application for lease
	• required documentation for application for renewal of lease
	4.1.2 For mining activities:
	0=No, or information not publicly available
	1=The tenure process is partially described
	2=The tenure process is fully described and publicly available, or the mining industry is not a significant economic activity in the country.
	Tenure is the process of leasing and administering mining rights owned by the state/ provincial or national government. For this indicator, researchers should review mining lease rules and regulations, which describe the process for obtaining a lease. Descriptions should include:
	• the entity responsible for evaluating applications
	• associated fees
	• required documentation for application for lease
	• required documentation for application for renewal of lease

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4.2. Monitoring and enforcement	Do mineral and energy projects require environmental impact assessments (EIAs)?
	4.2.1 For oil and gas:
	0=No
	1=Yes, or the oil and gas industry is not a significant economic activity in the country
	4.2.2 For mining activities:
	0=No
	1=Yes, or the mining industry is not a significant economic activity in the country
	4.2.3 Do regulations require on-site inspections to monitor environmental impact?
	0=No
	1=Yes
	4.2.4 Are data on oil spills collected by a government entity?
	0=No data are collected
	1=Yes, data are collected but are is not publicly available
	2=Yes, data are collected and are publicly available
4.3. Risk mitigation	4.3.1 Is the country a signatory of the Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC)?
	0=No
	1=Signed
	2=Signed and ratified (or action having the same legal effect)
	4.3.2 Do licensing requirements for oil extraction require licensees to have emergency plans to deal with marine emergencies caused by oil and other harmful substances?
	0=No
	1=Yes
	4.3.3 Are there off-shore areas that are off-limits to mineral and/or oil and gas extraction?
	0=No
	1=Yes

V. Land
This category is comprised of four indicators and five sub-indicators. This category measures the coastal governance environment for the tourism and real estate (residential and commercial) industries.

Indicator	Sub-indicators and scoring schemes
5.1. Prevalence of coastal protected areas	The EIU is using the share of terrestrial areas protected as a proxy of the prevalence of coastal protected areas.
	5.1.1 Are there any terrestrial protected areas?
	0=No, or share protected is less than 10% of total terrestrial area
	1=Share protected is at least 10% and less than17% of total terrestrial area
	2=Share protected is at least 17% of total terrestrial area
	The scoring scheme is based on the Convention of Biological Diversity's target that at least 17% of terrestrial and inland water should be protected by 2020.

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5.2. Environmental impact of coastal development	5.2.1 Do coastal development projects require environmental impact assessments?
	0= No
	1= Yes
	For the purposes of this index, coastal development projects refer to any real estate project on the shore line (housing, hotels, restaurants etc).
	5.2.2 Do regulations require on-site reviews to monitor environmental impact?
	0=No
	1=Yes
	Regulations should require on-site reviews to monitor compliance with an environmental protection plan. The monitoring may include reviews of described limits for discharges to the environment, including the sampling and analytical programme to quantify that compliance.
5.3. Government commitment to sustainability in coastal tourism development	This indicator is based on an indicator from the World Economic Forum's Travel and Tourism Competitiveness Report 2013.
	5.3.1 How would you assess the effectiveness of government efforts to ensure that tourism is being developed in a sustainable way?
	0= Very ineffective (development of the sector does not take into account issues related to environmental protection and sustainable development)
	6=Very effective (issues related to environmental protection and sustainable development are at the core of the government's strategy)
5.4 Natural disaster risk mitigation	5.4.1 Does the country have a natural disaster risk mitigation strategy that addresses coastal zones?
	0= No
	1= Yes
	The strategy may cover the implementation of monitoring systems and plans to manage the impact of natural hazards on coastal areas.

VI. Living resources
This category comprises 3 indicators and four sub-indicators on coastal management of living resources, including fisheries and wildlife.

Indicator	Sub-indicators and scoring schemes
6.1 Fisheries governance and management effectiveness	6.1.1 Fisheries governance and management effectiveness.
	This indicator measures the status of fisheries management and regulations in the top fishing nations of the world. Using data gathered through an expert survey that covers several aspects of management systems—including stock status, management approach, monitoring and enforcement, and socioeconomics—this indicator is intended to establish the level of fisheries governance and management effectiveness by country.
	Scored as the average of scores across four dimensions focused on:
	a) Research, monitoring and assessment of fisheries stocks
	b) Management response to stock status
	c) Enforcement of management measures
	d) Social and economic attributes (eg controls on access and entry into fishery, transparency and community involvement, subsidies)

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	Survey respondents assessed governance and effectiveness based on a list of ten key fish species caught by country. The ten species include:
	• The four species with the greatest landings caught by the country in FAO areas adjacent to the main EEZ
	• The four species with the greatest estimated landed value (based on FAO adjacent landings data and estimated ex-vessel prices)
	• The remainder of the ten species, randomly sampled in proportion to their landings and landed value
	Answers were provided in a global context, recognising that the survey was conducted across a wide range of countries differing in the development of their fisheries governance systems.
6.2 Protections for marine/ coastal species	6.2.1 Do domestic laws and/or regulations require the protection of threatened species and populations in coastal areas?
	0=No
	1=Yes
	Protection should, at a minimum, cover sea turtles and marine mammals.
	6.2.2 Extent of marine protected areas (MPAs):
	0=No MPAs or the share protected is less than 5% of total marine area
	1=Share protected is at least 5% and less than 10% of the total marine area
	2=Share protected is at least 10% of the total marine area
	The scoring scheme is based on the Convention of Biological Diversity's target that at least 10% of marine areas should be protected by 2020.
6.3 Ballast water treatment	6.3.1 Are there mechanisms in place to control pathways of introduction of alien species in the marine and coastal environment from ballast water?
	0=No
	1=Yes

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3. Methodology

a. General

To score the indicators for the Coastal Governance Index, the research team gathered data from the following sources:

- Primary texts of laws, regulations and other legal documents
- Government publications and reports
- Academic publications and reports
- Websites of governmental authorities, international organisations and non-governmental organisations
- Websites of industry associations
- Local and international news-media reports

Specific sources by indicator are available on request from the EIU.

Quantitative indicators were sourced from:

- World Bank Governance Indicators
- World Economic Forum
- Yale University Environmental Protection Index
- United Nations Environmental Programme and World Conservation Monitoring Centre
- Economist Intelligence Unit proprietary databases

b. Indicator choice

The EIU convened a panel of eight experts to help build the indicator framework of the Coastal Governance Index. The panel met in Washington, DC to provide guidance on the indicator framework. These experts came from a broad range of institutions, including the World Bank, United Nations, Ocean Conservancy, Bumble Bee Seafoods, California Fisheries Fund, Walton Family Foundation, International Seabed Authority and American Petroleum Institute.

The expert panel played a key role in:

- Defining what good coastal governance entails
- Refining the overall structure of the index
- Identifying the resources that require proper management in coastal areas

The EIU gathered the experts' input and finalised the indicator selection by conducting additional research. This process was a collaborative effort between the EIU and California Environmental Associates.

For indicator 6.1.1 on fisheries governance and management effectiveness, California Environmental Associates worked with Drs. Ray Hilborn and Michael Melnychuk (University of Washington) to create the methodology behind this indicator and collecting the data supporting the scores.

c. Country coverage

The Coastal Governance Index includes 20 countries. Several parameters were taken into account to determine the country list, including:

- Global catch production
- Size of the economy
- Length of coastline
- Oil and gas production
- Regional representation
- Level of economic development

Country coverage

Africa	Asia	Europe	South America	North America
1. Nigeria	3. China	11. France	15. Brazil	18. Canada
2. South Africa	4. India	12. Norway	16. Chile	19. Mexico
	5. Indonesia	13. Russia	17. Peru	20. United States
	6. Japan	14. Spain		
	7. New Zealand			
	8. Philippines			
	9. South Korea			
	10. Vietnam			

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d. Scoring criteria

There are 43 sub-indicators used to construct 24 indicators across six categories within the dynamic scoring model of the Coastal Government Index. The overall scores (0-100) for countries in the index are a weighted average of the six categories as determined by the weighting profile (for more information on index weights, please refer to Section (f), where each is scored on a scale of 0 to 100, such that 100 is associated with the most favourable coastal governance environment.

Many of the sub-indicators seek to measure the laws and standards of coastal governance. An experienced team of researchers probed the sources listed in Section (a) to provide informed and comprehensive answers to each question across all 20 countries. The EIU supplied a detailed set of guidance outlining the criteria and goals, in addition to a scoring scheme for each question. While the criteria for data collection were rigorous, they remain subjective. Staff from the EIU thoroughly reviewed, calibrated and compared scores to ensure proper justification and consistency across all countries.

Sub-indicator values range from binomial observations (0,1) to 100 possible scoring options, including 0-4 and 0-24 scoring scheme scales. Each sub-indicator is constructed such that the higher value always associates with more favourable coastal governance conditions. For example, a country with a highly independent legal process capable of avoiding external interference is assigned a score of 4 for the sub-indicator regarding the fairness of the judicial process (2.3.1). In contrast, a country with a legal process highly susceptible to distortion is assigned a score of 0.

Sub-indicator scores are then normalised to calculate the indicator and category scores ranging from 0 to 100, such that 100 is associated with the most favourable coastal governance environment.

e. Calculating the Coastal Governance Index

Modelling the sub-indicators, indicators and categories in the Coastal Governance Index results in overall scores of 0-100 for each country, where 100 represents the most favourable coastal governance conditions and 0 the least favourable. A score of 100 does not suggest that a country has achieved perfect coastal governance; likewise, a score of 0 does not mean that a country has no coastal governance. Rather, scores of 100 and 0 represent the highest or lowest possible scores, respectively, as measured by the index criteria.

The sub-indicator values are first normalised on the basis of the following equation:

$$x = (x - \text{Min}(x)) / (\text{Max}(x) - \text{Min}(x)),$$

where Min(x) and Max(x) are, respectively, the lowest and highest values allowed by the scoring scheme for any given sub-indicator. Those values are averaged to determine the value of the indicator:

$$\text{Indicator score} = \sum \text{individual sub-indicators} / \# \text{sub-indicators}$$

The indicators are classified into six categories: policy and institutional capacity (7 indicators); business environment for coastal activities (4 indicators); water quality (3 indicators); minerals and energy (3 indicators); land (4 indicators); and living resources (3 indicators). The category values are the average of the indicators that comprise the category.

$$\text{Category score} = \sum \text{individual indicators} / \# \text{indicators}$$

The category values are assigned neutral weights (please refer to Section (e) for more details) which ultimately determines the overall scores and rankings in the index.

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f. Weights

Assigning weights to index components is the final step of index construction, reflecting different assumptions about the relative importance of certain topics. As this index examines coastal governance from an innovative perspective insufficiently examined in the literature, neutral weights were assigned to the categories. This establishes a balanced foundation which can be modified in later editions of the index should expert feedback recommend it.

Neutral weights assumes the equal importance of all categories (rather than indicators) and evenly distributes weights on that basis. Each category in the index is comprised of between three and seven indicators, and all six categories are weighted equally at 16.7% (ie, 100% / 6). This approach has the advantage of simplicity and does not rely on subjective judgment; however, it does assume that all categories are equally significant. The reader can download the Excel model free of charge at http://www.economistinsights.com/analysis/coastal-governance-index and customise the weights for each category and indicator.

MAIN CATEGORIES			Weight
1)	POLICY AND INSTITUTIONAL CAPACITY	1	16.7%
2)	BUSINESS ENVIRONMENT FOR COASTAL ACTIVITIES	1	16.7%
3)	WATER QUALITY	1	16.7%
4)	MINERALS AND ENERGY	1	16.7%
5)	LAND	1	16.7%
6)	LIVING RESOURCES	1	16.7%
INDICATORS			**Weight**
1)	POLICY AND INSTITUTIONAL CAPACITY		
1.1)	Coastal management policy and strategy	1	14.3%
1.2)	Presence of established institution(s)	1	14.3%
1.3)	National strategy to adapt to climate change	1	14.3%
1.4)	Maritime Spatial Planning	1	14.3%
1.5)	Stakeholder engagement	1	14.3%
1.6)	Extractive industries transparency	1	14.3%
1.7)	Adoption of the United Nations Convention on the Law of the Sea (UNCLOS)	1	14.3%
2)	BUSINESS ENVIRONMENT FOR COASTAL ACTIVITIES		
2.1)	Ease of doing business	1	25.0%
2.2)	Corruption perception	1	25.0%
2.3)	Effectiveness of dispute resolution mechanisms	1	25.0%
2.4)	Quality of coastal infrastructure	1	25.0%
3)	WATER QUALITY		
3.1)	Agency	1	33.3%
3.2)	Regulatory standards for water pollution	1	33.3%
3.3)	Monitoring and enforcement	1	33.3%
4)	MINERALS AND ENERGY		
4.1)	Permitting and licensing	1	33.3%
4.2)	Monitoring and enforcement	1	33.3%
4.3)	Risk mitigation	1	33.3%
5)	LAND		
5.1)	Prevalence of coastal protected areas	1	25.0%
5.2)	Environmental impact of coastal development	1	25.0%
5.3)	Government commitment to sustainability in coastal tourism development	1	25.0%
5.4)	Natural disaster risk mitigation	1	25.0%
6)	LIVING RESOURCES		
6.1)	Fisheries governance and management effectiveness	1	33.3%
6.2)	Protection for marine/coastal species	1	33.3%
6.3)	Ballast water treatment	1	33.3%

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g. Model correlations

Correlating the Coastal Governance Index to "output" (dependent) variables reveals some potentially interesting associations. Correlations measure the strength of a relationship between two variables. Scatterplots, which can be found on the "Scatter" worksheet in the Index data model, show the correlations between the Coastal Governance Index and a number of variables. Some of these correlations are analysed in the Executive summary and index results sections of this report. The reader is encouraged to plot more correlations in the index data model.

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