Norwegian Ministries

Strategy

Blue Opportunities

The Norwegian Government's updated ocean strategy

Photo: Andreas Wolden, entry to the 2018 photography competition for seafarers. From the ice-class research vessel *Kronprins Haakon*.
Front page: From a survey off the Lofoten Islands in 2019. Photo: Emlyn Davies/SINTEF

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Photo: Getty Images

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Preface

Norway is a leading ocean nation.
The history of Norway is a story about the oceans.

Norwegians have always explored and lived off the sea. Some of the country's most innovative businesses, jobs and knowledge institutions trace their origins back to human settlements along the coast and ocean based activities.

Norwegian waters contain rich oil and gas resources, which have played a key role in the development of the welfare state and form the basis of a world-class oil and gas industry. The oceans are also the basis for Norway's seafood industry, one of the largest and most sustainable in the world, and for its large maritime industry. The long coastline and the skills and innovation capacity of the coastal population are the basis for job creation throughout the country.

The importance of the blue economy to Norway goes back centuries. Close cooperation between the business sector, research and education, employees and authorities has played an important role in the historical development of Norway as an ocean economy. In the years to come, the growing world population will need more jobs and more food, medicines and energy. The Organisation for Economic Cooperation and Development (OECD) estimates that the ocean economy could double its contribution to global value creation between 2010 and 2030.

There are substantial opportunities for future growth and job creation in industries that operate in a global market, whether they are established ocean industries such as oil and gas, fisheries, aquaculture and shipping, other industries such as coastal tourism and space-related activity, or emerging industries such as offshore wind power, seabed minerals and marine biotechnology. For the foreseeable future, the oceans will continue to be a vital basis for jobs, value creation and welfare throughout Norway, and they can also be part of the solution to the world's environmental and climate-related challenges.

To ensure future production and harvest from the seas and oceans, we must safeguard them. The environmental state of Norwegian waters is generally good, but the oceans are under pressure because of pollution, marine litter, climate change, loss of biodiversity and overexploitation of resources. A sound ocean policy and a sustainable ocean economy are vital for achieving the UN Sustainable Development Goals. Norway has a knowledge-based, integrated and responsible ocean management, and promotes an international framework for sustainable ocean management.

The speed of change and technological advances mean that constant efforts are needed to stay at the forefront of developments. Digitalisation, automation and globalisation have a strong influence on people's everyday work and on the skills that are needed along the coast and out at sea. Norway is prepared for restructuring and to make the most of the opportunities that arise.

It is vital for Norway's prosperity that the ocean industries are able to succeed and make use of opportunities in international markets. Norway is playing an active role in the development of international regulatory frameworks. A rule-based international trading system and Norwegian access to international markets are of crucial importance.

Norway will continue to be a leading ocean nation.

To achieve this, the Government will seek to maximise sustainable value creation and employment in the Norwegian ocean industries. A good, predictable framework for the business sector encourages further development of the strong knowledge and technology clusters along the coast, strengthens the long-term competitiveness of Norway's ocean industries internationally and contributes to a better ocean environment.

The ocean and the ocean industries are high on the political agenda both at home and abroad. The Government has prepared a number of white papers, strategies and action plans to promote further development of the ocean industries and strengthen ocean management. In 2017, the Government published its ocean strategy *New growth, proud history* and the white paper *The place of the oceans in Norway's foreign and development policy.*

The Government's ocean policy is ambitious and constantly evolving. Since the ocean strategy was published in 2017, Norway's ocean industries have developed further. The present document provides both a status report on Norway's ocean policy and charts a course for the future. Together with the ocean management plans and other policy documents, this updated ocean strategy continues Norway's clear and integrated strategic focus on ocean issues.

This updated strategy identifies three policy areas that are becoming increasingly important.

Climate change is one of the greatest threats of our time. Norway's nationally determined contribution under the Paris Agreement is to reduce greenhouse gas emissions by at least 40 % by 2030 compared with the 1990 level. Norway is in dialogue with the EU on joint fulfilment of the emission target for 2030. It is also a Government target for Norway to be a low-emission society by 2050, by reducing emissions by 90–95 %. The focus on green shipping is an important element of this work.

Norway´s ocean policy also has a clear regional focus. National ocean policy is developed in cooperation between central government, regional and local authorities. Employers and employees also play a key part in the efforts to achieve sustainable blue growth. The Government will promote local value creation in order to reduce the vulnerability of regional business communities and strengthen the adaptability of the regions.

The Government recognises that the ocean's resources are important for national value creation, and considers it important for exploitation of natural resources to have positive ripple effects in local communities. These points will be reflected in the forthcoming white paper on regional policy and in a new white paper on Arctic policy to be submitted in 2020.

Technologies, working methods and the use of digital tools are developing rapidly in the ocean industries. It is important to ensure that educational programmes are appropriately designed so that people have the right skills to make use of new opportunities. Digital content in ocean-related study programmes will be strengthened. It will also be important to use and build on Norwegians' historical advantages as fishermen, seafarers, oil and gas workers, oceanographers, explorers and innovators as we move into a more digitalised world.

Norway will continue to harvest its ocean resources. By building on its thriving coastal communities, accumulated knowledge and experience and a capacity for green transformation to improve its competitive position, Norway will be able to continue job creation and value creation and build a sustainable welfare society in the future.

The story about Norway will continue to be a story about the oceans. Norway will continue to be a leading ocean nation.

Jon Georg Dale
Minister of Transport

Ola Elvestuen
Minister of Climate and Environment

Kjell Børge Freiberg
Minister of Petroleum and Energy

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Minister of Trade and Industry

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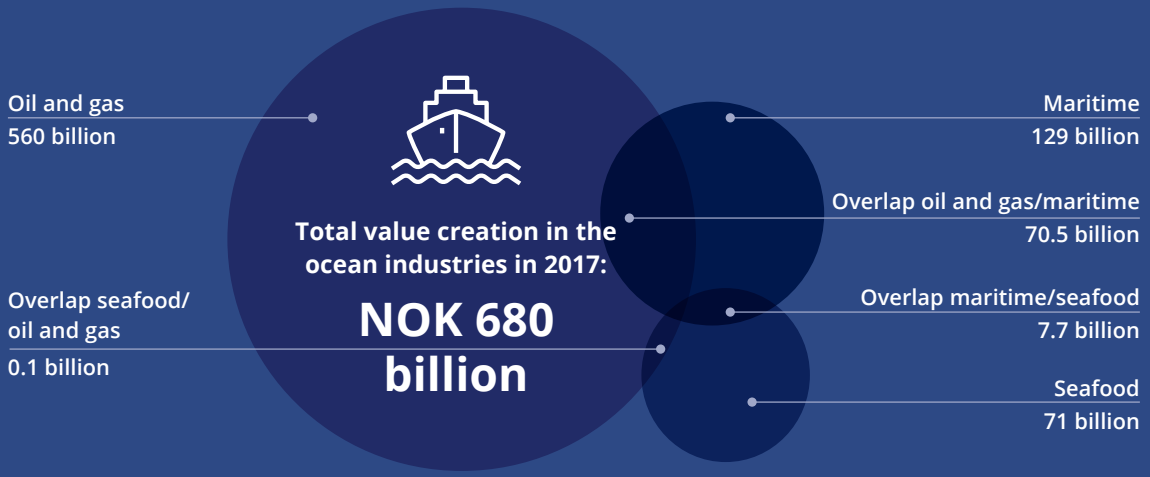
Minister of Research and Higher Education

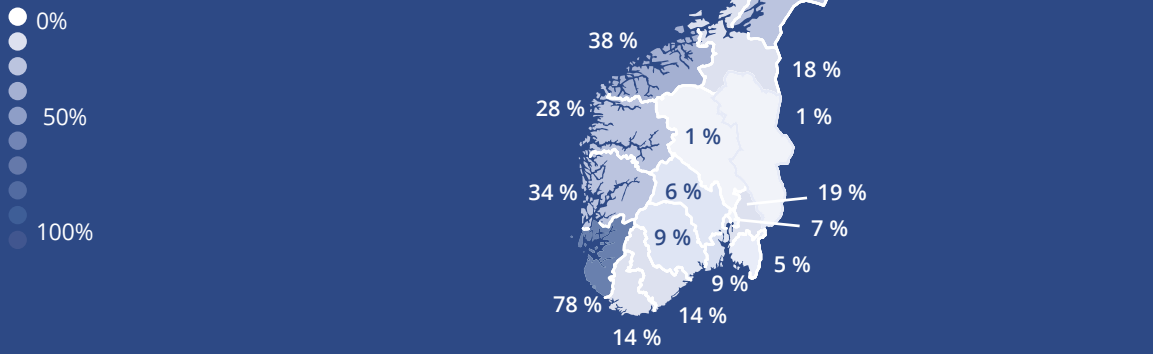
Ine Eriksen Søreide
Minister of Foreign Affairs

Dag-Inge Ulstein
Minister of International Development

The Ocean Industries in the Norwegian Economy



The ocean industries' percentage of value creation in the business community per municipality in 2017



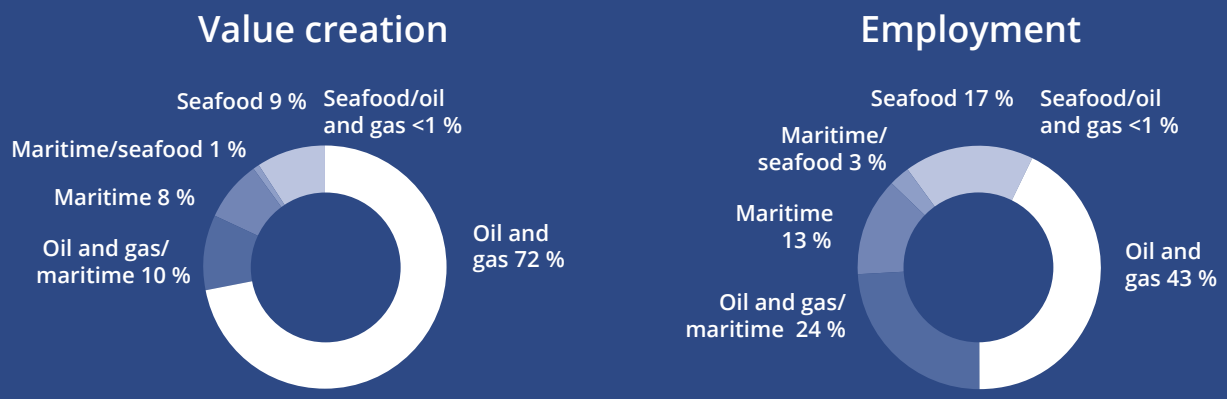
Source: Menon Economics 2019

Introduction

Norway is rich in natural resources and has always taken a long-term approach to resource management for the benefit of society as a whole. This has provided a basis for value creation in the ocean industries. These industries make up a substantial proportion of the Norwegian economy, and provide a living for many coastal communities. Norway's position as a leading ocean economy is to a large extent due to its well-developed business clusters and local communities along the coastline, with skilled employees and thriving businesses. Their expertise and the business clusters give Norway an important competitive edge globally. A future-oriented regional policy for Norway therefore also provides a sound basis for ocean policy.

In 2015, the UN General Assembly launched the 2030 Agenda for Sustainable Development. The agenda's 17 Sustainable Development Goals (SDGs) promotes social, environmental and economic development. The 2030 Agenda is the world's roadmap for fighting poverty and hunger, ensuring sufficient, safe food, promoting decent work and gender equality, fostering innovation, safeguarding biodiversity, providing access to clean energy, and halting climate change. SDG 14 calls on the world to conserve and sustainably use the oceans, seas and marine resources for sustainable development. Action to achieve the SDGs is a vital part of ocean-related efforts at international, national and local level. The 17 goals are interlinked, reflecting the complex nature of the challenges facing the world and the need to act together to find joint solutions.

The 2030 Agenda



Source: Menon Economics (2019)

The Government's ocean policy intends to unlock the potential for further sustainable job creation and value creation in the ocean industries, which already account for a large proportion of value creation and employment in the Norwegian economy. Norway's research and education policy provides support for a sound ocean policy, and 'seas and oceans' is one of the long-term priorities of the Long-term plan for research and higher education 2019–2028.

According to calculations by Menon Economics, the ocean industries (oil and gas, shipping and seafood) employ 206 000 people in Norway, or 11 % of all employment in the private sector. The ocean provides employment throughout the country, and especially along the coast. In 2017, total value creation in the ocean industries was NOK 680 billion. This means that the ocean industries account for more than 30 % of all value creation in the private sector.[1]

The oil and gas industry is Norway's largest ocean industry, generating value creation of NOK 560 billion in 2017. The maritime industry is the second largest at NOK 130 billion, while value creation in the seafood industry was NOK 71 billion. The figure on page 8 shows that the ocean industries overlap. Various businesses can be said to belong to more than one ocean industry.

This applies for example to the supplier industry, which provides services and equipment to various industries, while many companies in the maritime industry work closely with the oil and gas industry. Thus, about 55 % of value creation in the maritime industry overlaps with the oil and gas industry.

There are major opportunities for blue growth. The OECD estimates that the global ocean economy will double by 2030 from the 2010 level, while providing a total of 40 million jobs.[2] The world population will be close to 10 billion by 2050, coupled with rising spending power.[3] This will result in growing needs for food, energy, goods and services. Hence, there is potential for further growth in the Norwegian ocean industries. A SINTEF-study on the ocean industries in Northern Norway indicates that there is a considerable potential for growth in fisheries, aquaculture, the maritime industry, oil and gas, and emerging ocean industries.

Climate change, loss of biodiversity, pollution, marine litter and the spread of microplastics are affecting the world's oceans and threatening the marine environment. Climate change mitigation and adaptation are key challenges. Global warming will have impacts on biological production, the distribution of fish stocks, ecosystems and sea levels, and CO2 emissions contribute to ocean acidification.

1 These figures only include value creation generated by Norwegian businesses. This means that certain transfers, for example the cash flow from the State's Direct Financial Interest (SDFI) in the petroleum sector, are not included.

2 OECD (2016), *The Ocean Economy in 2030*

3 United Nations Population Division (2019)

The deck of the drilling platform for the Johan Sverdrup field at the Aibel shipyard in Haugesund, May 2018. Photo: Ministry of Petroleum and Energy

International cooperation between countries, including Norway and its ocean neighbours, is therefore vital for managing ocean resources. Norway's ocean industries are highly export-oriented and depend on market access, a competitive framework and smoothly functioning international cooperation.

The 1982 UN Convention on the Law of the Sea is the international regulatory framework for the management and use of the oceans and marine resources. Under the Convention, coastal states have both a right to use the oceans and marine resources, and an obligation to protect the marine environment. The Convention gives each coastal state sovereign rights to exploit and manage all natural resources in an area extending 200 nautical miles from its baseline and on its continental shelf, and contains important provisions on cooperation, management and research.

The basic principles for the Government's ocean policy are as follows: i) to strengthen and further develop the Law of the Sea, ii) to promote the conservation and sustainable use of marine ecosystems, iii) to contribute to knowledge-based management, iv) to support the implementation of international instruments, and v) to work towards an integrated approach to ocean management that will facilitate the development of a sustainable ocean economy.

This updated ocean strategy, Blue Opportunities, builds on the Government's ocean strategy[4] and the white paper on the oceans, both published in 2017.[5] The business sector and other stakeholders have provided input, which will be followed up. The strategy focuses on six priority areas:

Chapter 1 presents the Government´s policy for *future-oriented ocean industries*. Chapter 2 deals with *education, skills and the labour market*, because skills and recruitment are vital for the business sector, the public administration and knowledge institutions. Chapter 3 discusses *research, technology and innovation*, with a particular focus on industry-oriented research and technology development. Sustainable management of ocean resources based on sound management and a predictable framework is the topic of Chapter 4. Chapter 5 presents a policy for *clean and healthy oceans*. The goal is to safeguard marine biodiversity and keep the seas and oceans clean. Norway intends to maintain its central role in international ocean issues, and Chapter 6 deals with *international cooperation and ocean diplomacy*.

4 The Norwegian government's Ocean strategy, *New growth, Proud History* (2017)

5 Meld. St. 22 (2016–2017) *The place of the oceans in Norway's foreign and development policy*

Future-oriented ocean industries

Supporting continued sustainable growth and employment in both established and in emerging ocean industries is an important element of the Government's ocean policy. The ocean industries must be considered together, with an emphasis on synergies between the industries and the opportunities that arise from them. This approach must be supported by the regulatory framework and policy instruments. The ocean-based businesses have played a part in the development of dynamic local communities along the coast, and these will be important in ensuring continued growth.

The Government will facilitate growth and job creation in the ocean-based industries.

Technology and knowledge transfer between industries

Norway's established and emerging ocean industries often operate in tough weather conditions, with strong winds, high waves and low temperatures, and have developed technology and solutions that can withstand such challenges. New advances and technological solutions support increased technology transfer and learning across industries, and facilitate more flexible labour distribution. These changes may make the ocean industries more resilient and less vulnerable to market fluctuations. The emerging industries are building on the skills and technology developed by the established industries, especially the petroleum supply industry. The green shift in the economy provides new opportunities for restructuring, innovation and growth.

Oil and gas

The oil and gas industry provides an important basis for welfare, job creation and the development of innovative technological solutions. The Government's total net cash flow from the industry is estimated at NOK 263 billion in 2019. Norway has a cutting-edge, world-class oil and gas industry with expertise and technology that are also being used in the other ocean industries. There are large remaining oil and gas resources on the Norwegian continental shelf. The Norwegian Petroleum Directorate estimates that in 50 years of petroleum activities in Norway, about half of the total petroleum resources have been produced.

Global energy consumption is expected to increase considerably in the future due to population growth and greater prosperity, especially in Asia. There have been strict controls on emissions to air and sea on the Norwegian continental shelf for many years, and emissions from Norwegian petroleum activities are considerably lower than the average for other countries because operators have had incentives to reduce emissions. Thus, the Norwegian continental shelf is in a good position to meet the growing demand for energy with proportionally lower emissions.

There are currently 84 oil and gas fields in production on the Norwegian shelf, and the authorities approved nine new plans for development and operation in 2018. The development of the Johan Sverdrup field in the North Sea is the largest industrial project in Norway in decades, involving investments of about NOK 140 billion. These investments together with revenues to the licensees, the suppliers and the Government will have a major positive impact on Norwegian society. The operator of the field, Equinor, estimates that employment will total more than 150 000 person-years during the development phase from 2015 to 2025. The Johan Castberg field in the Barents Sea is also under development and will involve investments of NOK 47 billion and employment estimated at about 47 000 person-years during the development phase. During the production phase, employment on the field will be equivalent to just over 1700 person-years in a normal operating year.

A predictable framework is important for the petroleum industry. The Government will continue to facilitate profitable production of oil and gas by maintaining a predictable framework. This will include continuing the regular licensing rounds on the Norwegian continental shelf, in order to give the industry access to new exploration areas.

Shipping

Norway has developed important knowledge and expertise during its long history as a maritime nation. Maritime transport is becoming increasingly energy efficient, and Norway is playing a leading role internationally in making the shipping industry greener. The

Zero-emission vessel *Future of the Fjords* carrying tourists into Nærøyfjorden, one of three Norwegian fjords on the UNESCO World Heritage List. Photo: Sverre Hjørnevik/visitflam.com

Norwegian fleet is modern and specialised in capital-intensive segments such as offshore, chemical tankers and ro-ro (vehicle transport). Norway is the world's fifth largest maritime nation measured by fleet value, and the world's seventh largest measured by number of vessels.[6] The industry is giving priority to developing, testing and implementing high-tech solutions. By 2021, there will be about 70 electric or hybrid ferries in service along the coast.[7] This is more than one third of the country's car ferries. Alternative propulsion technology has also been developed for other vessel types, but deployment of new technology has not been as rapid in these segments as for ferries. The Government is to publish an action plan for green shipping with an ambition to reduce emissions from domestic shipping and fisheries by half by 2030, and will promote the use of low- and zero-emission solutions in all vessel categories. The action plan for green shipping presents the Government's policy for cutting domestic greenhouse gas emissions, strengthening the Norwegian maritime industry and contribute to global technological developments needed for the world to achieve the targets of the Paris Agreement.

Since 2015, the Green Shipping Programme has been working to raise awareness and build commitment to making the shipping industry greener. The studies and pilots in this public-private partnership are developing zero- and low-emission solutions that will make Norwegian domestic shipping more climate and environmentally friendly. The Government has allocated NOK 7 million to the programme in 2019.

Norwegian technology companies are developing and providing many of the new solutions for maritime transport. Following the introduction of stricter environmental requirements for international shipping, the export of Norwegian green solutions to the international market has become an even more attractive proposition. The International Maritime Organization (IMO) has adopted an ambition to cut emissions from international shipping in half by 2050. The global market for low- and zero-emission solutions will probably grow rapidly in the next decades.

Norway is one of the few high-cost countries that still has a shipbuilding industry. Ships built in Norway are high-tech and advanced, and constitutes an important part of domestic shipyards' competitive advantage. The Government is seeking to make Norwegian shipyards and equipment suppliers more competitive. Since 2017, the Norwegian Export Credit Guarantee Agency (GIEK) has been able to provide buyer credit guarantees for export-related investments in Norway. Guarantees can be given for investment loans for example for production facilities, machinery and equipment. In 2018, a new three-year financing scheme for vessels was established in GIEK and Export Credit Norway. It is now possible to obtain loans and guarantees to purchase vessels from shipyards in Norway for use in Norway, for example fishing vessels, ferries, live fish carriers, high-speed vessels and short sea vessels.

The Government's focus on green shipping will promote further green growth and boost the competitiveness of the Norwegian maritime industry, and will facilitate an increase in exports of low- and zero-emission technology

6 UNCTAD (2018) *Review of Maritime Transport 2018*
7 Norwegian Public Roads Administration (2019)

Natural gas from the Norwegian Sea is transported by pipeline to the processing plant at Nyhamna in Møre og Romsdal county. From here, the gas is exported to the UK and other European countries. Norway is the third largest gas exporter in the world. Photo: Ministry of Petroleum and Energy

in the maritime sector, for example by securing better market access through trade agreements with emerging markets.

Seafood

Norway is a an ocean economy with abundant living marine resources. The large fish stocks in Norwegian waters have provided Norway with food, jobs and income for many years. More recently, aquaculture has emerged as a significant industry. Norway is the world's leading producer of farmed salmon. In 2018, exports of Norwegian seafood reached NOK 99 billion.[8] The Government will facilitate further sustainable growth in the seafood industry.

The Government has introduced a new system for adjusting aquaculture production capacity that will facilitate predictable and environmentally sustainable growth of salmon and trout farming. In 2018, a first licensing round resulted in the allocation of 24 000 tonnes of new production capacity. The Government received approximately NOK 4 billion in licensing revenue, 80 % of which was allocated to municipalities and counties through the aquaculture fund. The environmental impact of the industry will be assessed again in 2019 and subsequently every second year, with the aim of carrying out a subsequent round of capacity adjustments. There is also a potential for expansion beyond salmon and trout. In 2019, the Research Council of Norway will review the opportunities and challenges involved in farming other marine species.

Offshore aquaculture allows fish farming further out at sea. This is a new development for the seafood industry that could make it possible to increase salmon exports and exports of new technology and knowledge. The Government is revising elements of the existing legislation in order to provide the industry with a sound, predictable regulatory framework as it moves further offshore, and to ensure that other considerations are taken into account, including environmental concerns, fish health and fish welfare, other ocean industries and worker safety.

The Government will ensure that Norwegian fish stocks are managed sustainably and in accordance with the best available scientific knowledge. New knowledge about sustainable fisheries presents new opportunities for the industry. In 2019, the Government permitted the start of a new fishery, the commercial harvesting of the copepod *Calanus finnmarchicus*. Sustainable management of marine resources requires sound national resource management and steps to combat fisheries crime.

Norway has a significant production industry based on fish, crustaceans and other marine resources as raw materials. At the same time, exports of whole fish have shown an upward trend, with further processing taking place outside Norway. A competitive seafood industry will to a larger extent be able to offer year-round, attractive jobs. The Government will facilitate an increase in seafood processing in Norway and promote increased value creation from residual marine raw materials.

8 Norwegian Seafood Council (2019), *Norwegian seafood exports in 2018*

Danish seining for cod near the Lofoten Islands. Photo: Directorate of Fisheries.

Tourism

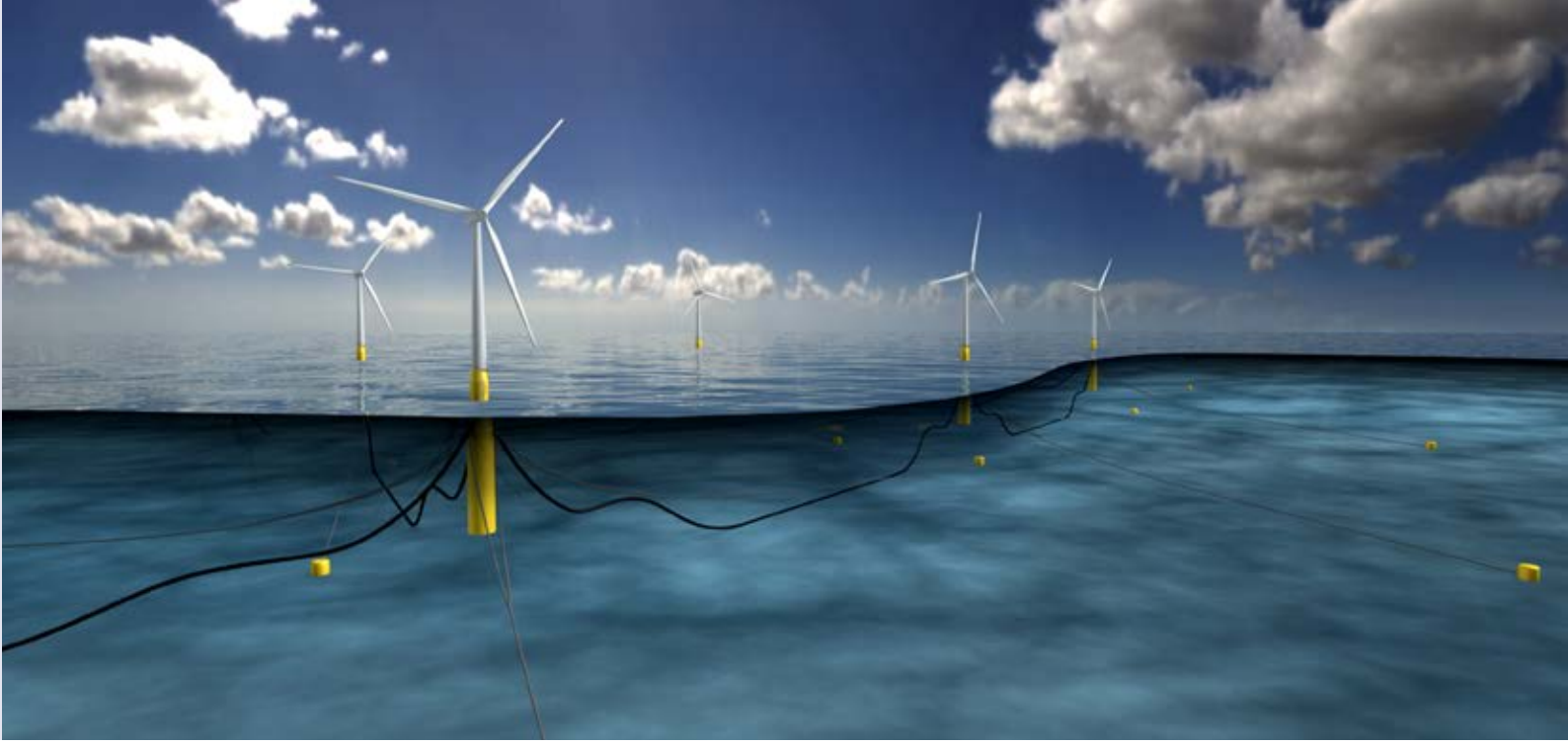
Tourism is a growth industry in many coastal communities and is based on the natural and cultural heritage of local communities. There are a number of ocean-based tourism activities, such as sailing, diving, fishing and whale safaris. Norway is also an increasingly popular cruise ship destination. Growing numbers of tourists are putting greater pressure on the environment, resources and coastal communities. The Government therefore underlines the need for sustainable development of Norwegian tourism, and has implemented new and stricter environmental requirements relating to emissions from cruise traffic in the West Norwegian Fjords World Heritage Site from 1 March 2019.

Norwegian food traditions based on local produce from sea and land are also a resource in the development of Norwegian tourism. Close coordination between the food and tourism industries could improve revenues and profitability in both industries. Tourism can strengthen local communities and result in better services for the local population and for a wider market. The Government will discuss whether the principal responsibility for the tourism initiative in Innovation Norway should be transferred from central government to regional level.

Carbon capture and storage

Norway already has several decades experience of carbon capture and storage (CCS) under the seabed on the Norwegian continental shelf. About 1.7 million tonnes per year of CO_2 has been separated from gas produced on the Sleipner and Snøhvit fields and stored under the seabed. This is equivalent to 3–4 % of Norway's total emissions. CCS can reduce emissions from industrial processes where there are currently no alternative technologies, and make it possible to reform natural gas to produce emission-free hydrogen. Experience of CCS puts the Norwegian business and research communities in a good position to participate in further developments. The Norwegian Petroleum Directorate estimates that it is possible to store more than 80 billion tonnes of CO_2 in reservoirs on the continental shelf.

The Norwegian full-scale CCS demonstration project involves conceptual studies of CO_2 capture from two industrial sources, the Norcem Breivik cement factory in Porsgrunn and Fortum Oslo Varme's waste management facility at Klemetsrud in Oslo. A conceptual study of CO_2 storage on the Norwegian shelf is also being carried out by Equinor in collaboration with Shell and Total, with the aim of establishing a high-capacity storage facility. According to current plans, an investment decision can be made in 2020. Successful implementation will make it possible to connect more emission sources to the storage facility, and reduce costs by using shared infrastructure and through technology transfer. The project may bring about substantial emission



Hywind Scotland is the world's first floating wind farm, and was developed by Equinor. The technology was developed in Norway and tested off the island of Karmøy. There are plans to test several floating wind turbine concepts developed in other countries at the Marine Energy Test Centre (METCENTRE) off Karmøy. There is a strong industrial cluster around the METCENTRE, and the Norwegian Offshore Wind Cluster was included in Innovation Norway's Arena programme in November 2018. Illustration: Equinor.

reductions that will help to achieve global climate targets and result in new industrial development. The Government's ambition is to achieve a cost-effective solution for full-scale CCS in Norway, provided that this also results in technology development internationally.

Seabed minerals

On the Norwegian continental shelf, there are deposits of metallic minerals that are important in the production of wind turbines, electric vehicles, solar panels, computers, mobile phones and other electronic equipment. There is increasing international demand for several of these metals. The Norwegian Petroleum Directorate is in the process of mapping the resource potential for seabed minerals on the Norwegian continental shelf. In the long term, there could be opportunities for profitable production of these minerals. The new Seabed Minerals Act will ensure that exploration and production takes place in an environmentally sound and sustainable way. The Government will consider opening parts of the Norwegian continental shelf to commercial and sustainable production of seabed minerals.

Offshore wind power

Offshore wind power is a rapidly growing sector internationally. At present, nearly all offshore wind installations use fixed-foundation turbines. However, Norwegian ocean industries have considerable maritime and petroleum-related expertise that could play a role in the development of floating wind farms. A number of Norwegian companies are participating in international projects on both fixed-foundation and floating wind power installations. The industry believes that floating installations offer considerable opportunities, since offshore expertise will be a competitive advantage when developing, installing and operating large wind turbines in deep waters. Cost trends will determine the extent to which offshore wind power can compete with land-based alternatives in Norway. In the long term, offshore wind power could become profitable in the Norwegian market, and the Government is therefore making preparations to open certain areas for licence applications for renewable offshore energy production.

Digitalisation

The development of new technologies, digitalisation, autonomous technology and big data will play an important role in various ways in the development of the ocean industries. Greater use of artificial intelligence may result in a higher recovery rate and more efficient operation of oil and gas fields. This would also make it possible to further develop the supplier industry, which uses a combination of industrial and digital skills. The development of digital solutions is also the key to improving energy efficiency in maritime operations, including remote operation from land. Growing activity in Arctic areas will increase the need for satellite-based services. Satellites can be used in monitoring ocean areas, search and rescue operations and accident prevention, and to provide information on marine litter and

Sugar kelp cultivation. Photo: SINTEF.

pollution. Satellites can facilitate fisheries, offshore and maritime transport operations, in addition to communications, mapping and weather reports. In 2018, the Storting (Norwegian parliament) gave Space Norway AS a conditional pledge of equity to enable the company to establish a system for satellite communication in the High North, with the purpose of establishing stable broadband coverage throughout the Arctic. The project will not be initiated until it is clear that it will be commercially profitable.

Export and market access

The Norwegian ocean industries depend on access to international markets. Good trade agreements are a vital basis for this, and the Government gives high priority to concluding such agreements. The authorities promote the Norwegian business sector abroad through a number of schemes. Innovation Norway, GIEK and Export Credit Norway promote exports and internationalisation by providing funding and advisory services and profiling for Norwegian businesses abroad. The authorities cooperate with a number of industry organisations, including the Norwegian Seafood Council, which promotes Norwegian seafood, Norwegian Energy Partners (NORWEP), which promotes the Norwegian energy industries, and Norwegian Maritime Exporters, which promotes maritime businesses abroad. The Foreign Service, through the missions abroad, promotes Norwegian commercial interests through networks, knowledge of local conditions, and by creating meeting places for the business community in various countries.

Business organisations and government agencies cooperate through the informal network Team Norway to ensure that efforts to promote the Norwegian business sector abroad are well coordinated. The Government has put promotion of the ocean industries high on Team Norway's agenda. An important part of Innovation Norway's work is image-building for the ocean industries, especially in the fields of climate and environmental technology. This is done for example through the country branding initiative Brand Norway, which has launched The Explorer as a digital marketplace showcasing sustainable Norwegian solutions. An image-building project for the ocean industries, Branding the Blue, has also been initiated. The Seafood Council has been working purposefully to build the reputation of Norwegian seafood in key markets. A new country of origin label, Seafood from Norway, has been developed. The aim is for consumers in other countries to associate Norway with high quality seafood and choose Norwegian products. Member companies of NORWEP in the oil and gas sector are seeing greater export opportunities in the renewable sector as well, especially in offshore wind power.

Nordlaks has been granted funding from Innovation Norway to develop Havfarm, a new type of fish farm. The company has also been granted development licences from the Ministry of Trade, Industry and Fisheries. This innovative fish farm can be sited in exposed waters, and is designed to withstand wave heights of up to 10 metres. Photo: Nordlaks/NSK Ship Design.

The 2030 Agenda

Norway's work for future-oriented ocean industries supports the 2030 Agenda, especially these Sustainable Development Goals:

Education, skills and the labour market

In all, the Norwegian ocean industries employ more than 206 000 people. Secure and attractive jobs are important to maintain recruitment of a highly skilled workforce. Knowledge- and experience-based skills in the Norwegian ocean industries are being maintained and further developed both along the coast and at sea. The use of increasingly advanced technology in the established ocean industries and the emergence of new ocean industries will require further development of education and skills. Increasing digitalisation and automation requires a workforce with skills, knowledge and adaptability that can further the competitiveness of the Norwegian ocean industries.

The Government will work to ensure that adequate and relevant skills are available for both established and emerging ocean industries.

Responsible labour market

The Government's goal is for Norway to have a labour market where employees enjoy security and flexibility, responsible employment practices, and there is well-functioning and effective tripartite cooperation. If Norway is to be a leading ocean economy, the safety and welfare of workers must have priority. This requires systems for inspection and enforcement of the legislation and good health, safety and working environment routines. An effective inspection and enforcement system is needed to expose any violations of workers' rights. Fighting work-related crime effectively requires a coordinated response. Inspection and enforcement activities will be more clearly targeted so that any work-related crime at sea can also be exposed.

Gender equality

The proportion of female employees is low in several ocean industries, making this an example of a gender-segregated labour market. Men often dominate in company ownership and senior management. The Girls and Technology partnership is a nationwide scheme with the aim of increasing the number of girls in STEM (science, technology, engineering and mathematics) disciplines at all levels of the education system. This is of interest to all industries that are dealing with technological change. The Government has increased its support for the scheme this year. Strengthening entrepreneurship among women is a key element of efforts to improve gender equality in the business section. An action plan for women entrepreneurs is being prepared, which will examine how policy instruments can be adjusted to promote female entrepreneurship.

A skilled workforce as a competitive advantage

The skills acquired by seafarers, fishermen and oil and gas workers over the years, in combination with research-based knowledge, have been vital in improving and optimising the design, construction and operation of fish farms, petroleum installations and ships. This has given Norway a competitive advantage that will be maintained and strengthened in cooperation with employers' and employees' organisations and the business sector by means of an active policy to boost skills and employment in the ocean industries.

The ocean industries make use of skilled workers in a number of disciplines with qualifications from various parts of the education system. Upper secondary vocational education programmes, at vocational college education and at higher education institutions are all important in ensuring that there is a supply of highly skilled workers for the ocean industries. As part of the follow-up to the 2017 ocean strategy, the quality and relevance of vocational college education has been improved in line with the recommendations of the white paper Skilled Workers for the Future from 2016. The Government will take steps to ensure that there is a good supply of specialists from the Upper secondary school system and vocational college education, and of engineers, technologists, scientists, social scientists, lawyers, and economists from the higher education system. It is vital for the competitiveness of the Norwegian ocean industries that they have access to a diverse workforce with relevant skills in the future as well. At the same time, traditional subjects such as navigation, geology, and related fields will continue to be of key importance for utilisation of ocean resources in the future.

Digital skills

New technological and digital solutions are creating a need for new skills, such as formalised operational expertise. Technological advances also provide more opportunities for innovative solutions. Enabling technologies and digitalisation have great potential in all of the ocean industries. Automated drilling solutions for offshore wells, autonomous vessels, automated feeding stations and the increasing automation of processes are making production in the ocean industries safer, more efficient and more climate and environmentally friendly. Expertise in autonomous systems, robotics, the Internet

Experience-based skills are crucial in the Norwegian ocean industries – in the maritime sector, fisheries and aquaculture, the petroleum industry and emerging industries. Photo: Vigdis Askjem /Maritim Logg

of Things, big data and artificial intelligence will become increasingly important for the international competitiveness of these industries, and could provide further synergies across the ocean industries. Since 2016, the Government has allocated funding for more than 1500 new places for students in ICT programmes at universities and university colleges in order to secure the business community increased access to skilled professionals. In line with the Long-term plan for research and higher education 2019–2028, the Government will also lay the foundation for increased digitalisation and use of new technology. Universities and university colleges must take a strategic approach to digitalisation and prepare goals and binding measures for digitalisation in education and research in order to ensure that students acquire the relevant and necessary digital skills. The Government will also strengthen digital skills in the ocean industries through a targeted digitalisation initiative in ocean-related study programmes.

Interaction and collaboration

To ensure continued sustainable growth and employment in the ocean industries, both the industries and the public administration must have enough employees with the right kinds of skills. This will make it possible to make even better use of the resources in the oceans and on the continental shelf, and to maintain clean and productive seas for future generations. Closer coordination between national and regional authorities, the business sector and educational institutions will be important in ensuring that business and industry can find enough employees with the right kinds of skills. The Government will strengthen the responsibility of the counties for providing relevant educational programmes adapted to local and regional needs. A white paper on the responsibilities of the new administrative regions expands the role of the counties in implementing the skills policy, extending their responsibilities beyond the ownership and operation of secondary schools and vocational technical colleges.

The Government wishes students to obtain useful and relevant skills and knowledge so that they are well prepared for the labour market of the future. In a forthcoming white paper on labour market relevance, the Government will assess how to strengthen cooperation on higher education between universities, university colleges and employers. The ambition is to improve the quality and labour market relevance of educational programmes through closer cooperation on identifying the skills needed by society and students' learning outcomes.

Lifelong learning

Continuous transformation of the ocean industries increases the need for continuous skills development in the labour market. It is therefore important to enable the education system to meet the needs for post-qualifying and continuing education in order to help maintain the competitiveness of the ocean industries. In 2020, the Government will present a white paper to the Norwegian Parliament on the competence reform "Life-long learning". In the white paper, the Government will evaluate measures that could contribute with relevant and flexible offers of continuing education for increased skills in the labour market.

The Offshore Simulator Centre in Ålesund performs virtual operations in real time. Simulation is used in training and is also an important tool for procedures, planning, and prototyping. Simulation saves time and money, reduces risk and plays a key role in innovation. Photo: Offshore Simulator Centre.

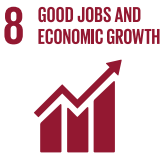
Dynamic local communities

Ensuring an adequate supply of the right kinds of labour is particularly challenging in North Norway, where much of the future growth in the ocean industries is expected to take place and the population is declining. As part of the follow-up to its Arctic strategy, the Government launched the programme N2 in 2019 together with the three northernmost counties and the Sámediggi (Sami parliament). This is a supplier development programme that is bringing together funding instruments for expertise, research and innovation to strengthen supplier clusters and networks in North Norway. In order to be dynamic, local communities have to be attractive to potential employees. Although the Government sets the overall framework for social development, local developments depend mainly on what local stakeholders, municipalities and counties are able to change and develop. Collaboration between municipalities, educational institutions, the business community, the voluntary sectors and the counties is a vital basis for making use of the potential for development. Regional policy is therefore an important part of an ocean policy for the future.

The Government has initiated a reform of local and regional government to take effect in 2020. In this connection, the counties are being given more responsibility for providing relevant educational programmes adapted to local and regional needs. Through close contact with the business sector and the municipalities, the counties will be able to identify each region's needs for labour, for example in the ocean industries. This will make it easier for the counties to adjust capacity in different study programmes in upper secondary schools and vocational technical colleges in line with the needs in the ocean industries.

The 2030 Agenda

Norway's work on education, skills and the labour market supports the 2030 Agenda, especially these Sustainable Development Goals:



Research, technology and innovation

Research, knowledge and technological development are vital in realising the potential for sustainable job and value creation in the ocean industries. Boosting research and development results in value creation and growth through the development of new goods and services, production methods and solutions, while proper stewardship of resources is maintained. In addition, the exchange of knowledge and technology across sectors opens up new opportunities in Norwegian ocean industries.

The Government will support research and technology development that result in sustainable job and value creation in the ocean industries.

The long-term plan for research and higher education

Interdisciplinary challenges in the interface between technology, social sciences and natural sciences require the continued development of knowledge, technology and methodology. Areas where there are both opportunities and challenges include making maritime transport and energy production more efficient and environmentally friendly, developing aquaculture technology for more exposed locations, and developing satellite technology for maritime surveillance. The research effort in the ocean industries ranges from basic research where knowledge in itself is the goal, to public-sector- and industry-oriented research designed to find answers to specific challenges and opportunities. The Long-term plan for research and higher education 2019–2028 is the Government's instrument for determining long-term priorities in this area. One of these is 'seas and oceans', where sound management, clean and productive seas and oceans, healthy and safe seafood and sustainable industrial development are key topics, in line with the Government's overall ocean policy.

Research and innovation

The oceans have been given high priority in the national budgets under this Government, which is pursuing an active research and innovation policy that benefits the ocean industries. These industries have received substantial funding from grant schemes under the Research Council of Norway, Innovation Norway and in the form of tax deductions under the SkatteFUNN tax incentive scheme. In 2018, the ocean industries received nearly NOK 4.2 billion through these funding instruments. This was an increase of NOK 1.8 billion from 2013. In 2018, Innovation Norway allocated NOK 523 million in funding from its environmental technology scheme. More than half of this funding went to projects in the ocean industries.

The Government has initiated an overall review of the industry-oriented funding instruments, which will consider the whole range of these instruments. The purpose is to improve and simplify the current grant schemes to make them more user-friendly, and so that public investments yield the highest possible value creation and as many profitable jobs as possible.

Green shipping

Enova grants funding for investments in climate and energy projects in all sectors. Since 2015, Enova has allocated about NOK 1.5 billion to green shipping. A large proportion of the funding has been for the development of vessels using battery technology. In the same period, Enova has also provided around NOK 500 million towards the development of shore power in Norwegian ports following competitive calls for proposals.

The PILOT-E scheme involves collaboration between Innovation Norway, the Research Council of Norway and ENOVA. Its aim is to speed up the development and deployment of novel products and services in the field of environment-friendly energy technology so that emissions are reduced both in Norway and internationally. Four projects on zero-emission solutions for various types of vessels received PILOT-E funding in 2016. The projects are ambitious and ground-breaking, and will play an important part in advancing solutions for maritime low- and zero-emission transport.

The petroleum industry – lower emissions and efficient use of resources

Improving recovery rates for oil and gas on the Norwegian continental shelf will substantially increase revenues to the Norwegian state. R&D to improve recovery from fields that are in production is therefore a priority area. It is a Government target for Norway to be a low-emission

The North Sea has rich marine resources and technologically advanced industries, and is important for Europe's blue economy. The Interreg project PERISCOPE is building innovation partnerships for sustainable business development in new blue markets. The project is headed by the South Norway European Office. Illustration: Ulstein Design and Solutions.
Map: Nordregio.

society by 2050. One step towards this target was the establishment of the LowEmission Research Centre, which will develop technology for the Norwegian continental shelf. It will be hosted by SINTEF in Trondheim. The centre is expected to attract larger numbers of good applications for research programmes such as Demo 2000 and Petromaks 2.

Wind power

Offshore wind is one of six priority areas in the national strategy for research, development, demonstration and commercialisation of new, climate-friendly energy technology, Energi21. Norway's research and innovation system supports initiatives at all stages of the innovation chain to develop new energy technologies such as offshore wind technologies. The Research Council of Norway runs the large-scale energy research programme ENERGIX, which started in 2013. The programme will help to achieve key energy and industry policy objectives, and is an important instrument in the implementation of the Energi21 strategy. The ENERGIX programme includes a number of offshore wind projects including technology development for both floating and fixed offshore wind installations.

Ocean Pilot

There is growing international competition to lead the way in technology development, and it is therefore vital to implement and commercialise new technology, solutions and services. Pilot projects, demonstration projects and upscaling require long-term funding. In 2018, the Government established a dedicated grant scheme for pilot and demonstration projects for the marine and maritime sectors under Innovation Norway. The scheme is intended to reduce risk for private stakeholders wishing to realise and commercialise new ocean technology.

Test facilities and catapults

Through the funding agency Siva, the Government supported the establishment of three national catapult centres for the ocean industries in 2018. The catapult centres are intended to make prototype development and testing, simulation and visualisation easier for companies, so that ideas are developed more quickly, better and at lower risk. The three catapult centres offer testing facilities, equipment, expertise and networks for businesses and research communities in the following three areas: digitalisation, virtual reality and prototyping; green energy, energy systems and energy technology; and environmental and material technology.

Laboratory capacity is needed for the ocean industries and for research on the marine environment. A concept proposal has been put forward for renewal of the ocean laboratories at the Norwegian University of Science and Technology (NTNU) and SINTEF Ocean, called Ocean Space Laboratories. External quality assurance of the project has been carried out, and the investment costs are estimated at NOK 6.1 billion. The project is now in the pre-study phase, and it will later be decided whether to move on to the pre-project phase. The laboratories will play a part in increasing value creation and making better use of synergies between the ocean industries.

Animals in the Southern Ocean depend on the krill. This small, shrimp-like species plays such a vital role that the ecosystem is often called 'krill-centred'. Here, students and researchers on the research vessel *Kronprins Haakon* are busy sorting, measuring and weighing krill from the latest haul. Photo: Oda Linnea Brekke Iden/Institute of Marine Research.

The Ocean Space Laboratories can be used for teaching, basic research, applied research, innovation and testing.

Norwegian ocean industries are at the forefront in areas such as digitalisation and autonomous solutions, and test beds for autonomous vessels have been established in the Trondheimsfjorden, Storfjorden and Oslofjorden.

Research cooperation with the EU and the UN Decade of Ocean Science

International research cooperation provides access to new knowledge, technology, networks, markets, and infrastructure. Participation in the EU Framework Programme for Research and Innovation, Horizon 2020, is the largest single initiative by the Norwegian authorities in international cooperation on research and innovation. The oceans are likely to be given more weight in the next framework programme, Horizon Europe, than has been the case in Horizon 2020. It is important for Norwegian ocean interests and research groups to use the opportunities offered by the UN Decade of Ocean Science for Sustainable Development (2021–2030). This is intended to generate knowledge that can be used in achieving the Sustainable Development Goals. The new knowledge that is developed will also benefit Norway and the Norwegian ocean industries. At the same time, as an ocean economy with broad expertise, Norway has a responsibility to contribute to improving our knowledge of the world's oceans.

The 2030 Agenda

Norway's work on research, technology and innovation supports the 2030 Agenda, especially these Sustainable Development Goals:

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Sound management and a predictable framework

Norway will maintain its position as a world leader in sound ocean management, and will promote value creation from the ocean. This requires ecosystem-based management with a sound scientific basis for plans and decisions, support for research and technology development, and a predictable framework. Different industries must be considered together, commercial activities must be effectively regulated, and the regulatory framework must be enforced. Over time, climate change is having an impact on the marine environment and the resource base. Greater knowledge about the current and future climate is needed to take action and adapt the management regime to change. International cooperation is also an essential basis for sound, sustainable Norwegian ocean management.

Norway will have a knowledge-based, integrated and responsible ocean management regime.

Integrated ocean management and a framework for ocean industries

A sound management regime is created over time. Norway has modern, well-developed management systems for the ocean-based industries. Norway has a long tradition of ensuring that the most important ocean industries can develop side by side and that the environmental values of in the seas and oceans are maintained. The ocean industries are governed by sectoral legislation, and resources are managed by relevant authorities using a long-term approach. Since the ocean strategy was presented in 2017, the existing legislation and framework have been further developed, and new legislation has been adopted. A comparative analysis of the regulatory framework for ocean industries has been undertaken, which can be used in future regulatory work for both existing and emerging ocean industries.

The government will establish an integrated framework for ocean-based industries, including area based measures for petroleum activities in the ocean management plans.

Norway's integrated ocean management plans are a tool both for facilitating value creation and food security and for maintaining the environmental values of Norway's sea areas. They clarify the overall framework and priorities for the management of Norway's sea areas, increase predictability and facilitate coexistence between ocean industries that are based on the use of these sea areas and their natural resources. Activities in each management plan area are regulated on the basis of existing legislation governing different sectors. The management plans ensure a balance between different interests, and that all uses of the ocean are considered together and coordinated. The Government will continue the current system of regularly updating and revising the management plans. In 2020, the Government will present a white paper on revision of the management plan for the Barents Sea–Lofoten area and updating of the plans for the Norwegian Sea and the North Sea and Skagerrak.

Local planning and management

Coastal waters are important in the further development of Norway as an ocean economy. The development of ocean industries depends on sound knowledge of the resource base, local planning and management, infrastructure, and well-functioning local communities along the coast. The counties and municipalities play an important role as local planning and environmental authorities. They prepare plans under the Planning and Building Act, which must strike a balance between conservation and sustainable use of different areas and facilitate business development. The Government is giving priority to further development of the legislation, advisory work, building expertise and assisting counties and municipalities to maintain sound, up-to-date plans. The Government has published a circular on the legal basis for planning and resource utilisation in coastal waters, and guidelines for planning in the coastal zone are under preparation.

Oil and gas

The oil and gas industry plays a key role in the Norwegian economy, and it will continue to make a major contribution to financing the Norwegian welfare society. The Government will maintain a stable long-term petroleum policy. The exploration policy is an important element of Norway's long-term resource management. New, profitable discoveries that secure revenue, value creation and employment are important in maintaining Norway's welfare society. In 2018, the Storting (Norwegian parliament) discussed the plan for development and operation of the Johan Castberg oil field and the updated status of oil and gas activities on the Norwegian shelf. The Storting determined that Norwegian petroleum policy remains unchanged.

Seabed minerals

The Storting has adopted a new Seabed Mineral Act , which enters into force on 1 July 2019. The Government will manage seabed minerals in line with the new Act, and will consider opening parts of the Norwegian continental shelf for commercial and sustainable extraction of seabed minerals.

The Vard Langsten shipyard in Møre og Romsdal is to build three new Coast Guard vessels (length 136 metres and beam 19 metres), which will carry up to 100 people. Illustration: Vard.

Fisheries

The quota system for the Norwegian fisheries has developed through constant adaptation and initiatives to respond to changes in stocks, the industry and society. The current quota system is both complex and debated, and a more efficient, flexible and modern system is needed. The Government therefore appointed a committee to review the quota system, which presented its recommendations in 2016. The Government is following up the review, and will submit a white paper on the quota system. This will present the Government's proposal for a forward-looking quota system for Norwegian fisheries.

Sustainable management of the fisheries requires compliance with quotas and other regulatory measures. There is also growing market demand for reliable documentation that seafood is sustainably harvested. The Government wishes to improve control of the harvesting of fish stocks, and in June 2018 appointed a committee to give advice on the structure of a fisheries control system for the future. The committee's mandate includes giving advice on technology that can be used to provide reliable data on harvesting and presenting proposals for amendments to the legislation and organisation of inspection and control resources. The committee is to submit its recommendations by December 2019.

Knowledge-based management

Sound management of Norway's sea areas must be knowledge-based, and public-sector-oriented research is used to ensure an adequate knowledge base. For example, a number of mapping and knowledge generation programmes have been established, many of which have been in progress for a long time. Since 2005, the MAREANO programme has mapped more than 10 % of the seabed in the Norwegian economic zone. MAREANO maps depth and topography, sediment composition, habitats and pollutants. The programme is important as a basis for integrated, ecosystem-based management of Norwegian seas and oceans.

Selected areas along the coast are also being mapped in cooperation between government agencies, municipalities and counties to improve the knowledge base for spatial planning and resource management in coastal waters.

As part of its long-term data acquisition in northern waters, the Norwegian Petroleum Directorate will conduct a seismic survey in the northern Barents Sea during the summer of 2019. This will provide important information on the geology of the area and a better resource estimate. The Petroleum Directorate has also started to map the resource potential for seabed minerals on the Norwegian continental shelf, including a survey of the deep-water areas of the Norwegian Sea in summer 2018.

The Nansen Legacy is a research project to improve scientific understanding of climate change and marine ecosystems in the central and northern parts of the Barents Sea. Ten Norwegian universities and research institutes are cooperating in the project.

The ice-class research vessel Kronprins Haakon has been operative since 2018, and has completed several

Drone images from Nykirke pier, Bergen showing the research vessels *G.O. Sars* and *Kristine Bonnevie*.
Photo: Lars Doksæter/ Screen Story / Institute of Marine Research

surveys. A new building for the Fram Centre in Tromsø was opened in 2018. The Government is reviewing the possibility of co-locating the Institute of Marine Research and the Norwegian Directorate of Fisheries in a new building in Bergen. This could provide opportunities for knowledge exchange between important knowledge and research communities and for building expertise. To build up knowledge of the blue economy in Arctic areas, the Centre for the Ocean and the Arctic was established in Tromsø in 2018.

Maritime transport

The sea is a vital transport route. Maritime transport accounts for 80 % of all freight transport to and from Norway. Using the sea in this way requires good, efficient maritime infrastructure and services to enable vessels to sail safely. The continued development of navigation infrastructure, maritime safety services, fairways and new communication solutions (ITS) is therefore important. Digitalisation offers opportunities for improving maritime safety, streamlining the port network, and optimising the ocean-based logistics chains. Digitalisation in the maritime sector, including the development of autonomous vessels, may also result in new demands on maritime infrastructure, services and the regulatory framework. It is therefore important for the authorities to follow developments closely. Work on a white paper on the National Transport Plan for 2022–2033 is in progress, and it will be submitted in 2021.

The Government has submitted a proposal for a new Act on ports and navigable waters that is intended to improve conditions for maritime transport, achieve transport and industrial policy goals and address environmental concerns. Competition to use sea areas has become more intense in recent years, and there are many user interests in the coastal zone. The legislation is therefore intended to take a broader approach rather than focusing largely on maritime transport and ports. In conjunction with other legislation such as the Planning and Building Act, it is intended to safeguard a wider range of business interests and other user interests, and to take into account climate and environmental considerations.

Maritime safety

The Government is striving for a high degree of safety for life, health, environment and material assets nationally and internationally. Among other things, the technological development provides opportunities for safer, cleaner and more efficient operation of vessels, and presupposes high competence in the Maritime Administration and other authorities and in the maritime industry. New technology could also contribute to more efficient supervision, for example by using drones. The Ship Safety and Security Act and the Ship Labour Act, with associated regulations, are key legislation for the continuing efforts associated with maritime safety. Before the summer of 2019, the Government will submit a white paper concerning maritime safety for both commercial and recreational vessels.

The ARCSAR network will develop new technology and plans and strengthen cooperation to deal with security and safety threats in the Arctic. The EU Horizon 2020 programme has allocated NOK 35 million to its establishment. The network is coordinated by the Joint Rescue and Coordination Centre North Norway, and partners include a number of countries, SAR operators, universities and businesses. Photo: Joint Rescue and Coordination Centre North Norway

Search and rescue and emergency preparedness

Value creation from the ocean requires search and rescue (SAR) services that can provide assistance in emergencies. The Norwegian SAR service is responsible for large areas in the Skagerrak, the North Sea, the Norwegian Sea, the Barents Sea and the Arctic Ocean. The SAR service is dimensioned for Norway's distinctive geography, climate, maritime resources, and government administration.

Maritime traffic has increased considerably in recent years, and this is expected to continue. Melting sea ice and warmer oceans have led to more activity in northern waters. The fishing fleet is operating further north, cruise traffic in polar areas is increasing, and new shipping routes are being considered as the ice melts. The higher level of activity resulting from the expansion of commercial activities and ship-based tourism is increasing the risk of accidents. The Government is monitoring developments and evaluating emergency preparedness capabilities continuously in the light of activities in the region and changes in the level of risk.

In recent years, SAR preparedness has been considerably strengthened in Svalbard, and Longyearbyen is now a SAR hub for the area. The Governor of Svalbard has two new SAR helicopters, and the sailing season for the vessel Polarsyssel has been extended to nine months. Overall SAR capacity in the Arctic will be further strengthened by the procurement of 16 new rescue helicopters with a much larger range, higher speed and better ability to operate in bad weather than the current Sea King machines. This will be one of Norway's largest investments in civil protection and preparedness in recent years. The Government is also assessing the need for other steps to improve SAR helicopter capacity in Troms and adjacent sea areas, where it is currently a long way to other long-range SAR resources.

The Coast Guard maintains a continuous presence in sea areas where Norway has jurisdiction, and plays a key role in SAR preparedness at sea. From 2019, part of the operational responsibility for the state tugboat preparedness has been transferred to the Coast Guard, and two new Coast Guard vessels will therefore be put into service from January 2020. A further three Coast Guard vessels are under construction and will be phased in from 2022 to 2024. They will replace the current Nordkapp-class vessels.

The Coast Guard also exercises Norwegian sovereignty and authority and provides support for civil society, and is an important government agency both in coastal areas and in Norway's large Arctic sea areas. The Coast Guard plays an important role in connection with marine resource control, including ensuring that fish stocks are harvested sustainably in the long term. The Coast Guard works closely with the fishery authorities.

International cooperation strengthens emergency preparedness in Norway's sea areas. Norway and Russia have a bilateral agreement on SAR cooperation in the Barents Sea, and Norway is a party to the Arctic Council

The AIS satellites receive position data from vessels (Automatic Identification System (AIS) signals), and they are of great importance for governance of Norwegian waters and for safety and security at sea. AISSat-1 was launched in 2010 and AISSat-2 in 2014. Norsat-1 and Norsat-2, which were launched in 2017, also have AIS receivers. Photo: Norwegian Space Centre/Norwegian Defence Research Establishment/NASA.

Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic. In addition, there is a bilateral agreement between Norway and Russia on mutual notification, exercises and assistance in the event of oil spills in the Barents Sea, and the Arctic Council Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic.

Regional reform

The Government's aim is to distribute power and build society from below. The sustainable use of natural resources must also have positive effects for local communities. The regional reform will be in effect from 2020, and will give the county authorities more responsibility for regional industrial and skills policy. These are important instruments for encouraging the creation of more jobs, economic growth and balanced population development in rural areas, in line with the goals of the Government's rural and regional policy.

Because of the regional reform, and to ensure a close dialogue between the regional and national levels, the Government will establish a forum for systematic dialogue on ocean issues between the Government, the counties, the Sámediggi (Sami parliament) and representatives of coastal municipalities. Others will be invited to take part when appropriate. The dialogue will provide a basis for greater trust and cooperation between national, regional and local administrative bodies. This will also improve understanding of various approaches to blue growth. The purpose of the forum will be to facilitate dialogue, and it will not be a decision-making body. The members of the forum will decide on topics for discussion together, based on the priority areas of this strategy that have implications for spatial planning, value creation, employment and skills in coastal communities.

The 2030 Agenda

Norway's work on sound management and a predictable framework supports the 2030 Agenda, especially these Sustainable Development Goals:

Clean and healthy oceans

Clean and healthy oceans are an essential basis for a sustainable ocean economy. Future value creation depends on good environmental status and on species and habitat diversity in the seas and oceans. Norway's ocean policy is intended to maintain the value of Norway's marine and coastal environment, safeguard the oceans as a source of food and facilitate sustainable use of ocean resources.

Norway will play a leading role in ensuring that the oceans are clean and healthy in the future.

Human activity both at sea and on land is putting pressure on marine ecosystems. It is vital to develop an overall understanding of the cumulative environmental effects of all the different activities. The state of the environment in Norwegian sea areas is generally good, although there are higher concentrations of hazardous substances and marine litter in the North Sea and Skagerrak than in other areas. Global problems are also affecting Norwegian waters. The most serious environmental problems are climate change, the loss of marine biodiversity, pollution and marine litter. If Norway is to continue to rely on the oceans in future, it will be essential to have a good knowledge base and a sound marine management regime, to address the challenges we are facing and to ensure that economic activity is sustainable.

Climate change and 'blue forests'

The oceans play a vital role in the climate system as a carbon pool and heat store, but at the same time marine ecosystems are being strongly affected by climate change and ocean acidification. As the seas become warmer and more acidic, living conditions in the marine environment will be altered, and this may also have serious impacts for people who rely on ocean resources. Climate change will have particularly serious impacts in northern waters as temperatures and pH levels change. In addition, the sea ice is melting and run-off from Arctic rivers is increasing. Climate change adaptation and mitigation measures must go hand in hand to prevent climate change from having serious consequences.

At the same time, marine ecosystems can play a key role in the fight against climate change and in adaptation to climate change. 'Blue forests' such as kelp forests, eelgrass beds and mangroves have a substantial carbon storage capacity and can protect the coastline against erosion, storms, and flooding. Blue forests are also important for marine productivity and biodiversity. The Norwegian Government will seek to protect blue vegetation and blue forests in order to maintain carbon storage and safeguard marine biodiversity.

Biodiversity

High biodiversity is the basis for ecosystem productivity from which people harvest, and for the adaptability of ecosystems. Norway will play a part in developing a new post-2020 global framework for biodiversity governance under the Convention on Biological Diversity. To strengthen the protection of marine biodiversity, the Government will present a plan for marine protected areas with the aim of protecting a representative selection of Norway's coastal and marine areas.

Pollution

Norway has a strict regulatory regime to prevent pollution and litter, but in many cases, marine litter and pollutants in Norwegian waters originate from other parts of the world. Resolving these problems requires international cooperation.

In 2018, the Norwegian Centre for Oil Spill Preparedness and Marine Environment was established in Svolvær. This is intended to be an internationally leading centre of expertise on cleaner seas. One of its tasks will be to identify possible synergies between work on marine litter and on oil spill preparedness relating to technology, methods and organisation. Work on marine litter will focus mainly on clean-up and prevention, especially of litter from sea-based sources.

Local pollution has been a problem in many Norwegian ports. A national action plan has been prepared for contaminated sediments and is being implemented. Remediation projects in Puddefjorden (Bergen) and Sandnesfjorden were completed in 2018. Funding has been allocated for a remediation project for Horten port.

Red king crabs being released from traps and pots retrieved from the seabed during one of the Directorate of Fisheries' annual retrieval programmes. Since the programme began in 1983, 21 000 nets, 10 000 traps and pots and considerable quantities of other fishing gear have been recovered from the seabed. This reduces the risk of ghost fishing and the spread of microplastics. Photo: Directorate of Fisheries.

The national preparedness and response system for acute pollution is designed to prevent and limit environmental damage in the event of spills. The Norwegian Coastal Administration is the national authority responsible for dealing with acute pollution incidents, or the risk of acute pollution, and for maintaining governmental preparedness and response capability for acute pollution by keeping personnel on stand-by and maintaining equipment depots. The Government will continue to maintain an effective preparedness and response system for acute pollution in order to prevent and limit environmental damage.

Plastic litter

The Government has stepped up efforts to prevent and reduce marine plastic litter. In 2017, a strategy for plastics was presented as part of a white paper on waste policy and the circular economy. A grant scheme for projects to prevent and clean-up marine litter has been established, including more support for voluntary beach clean-up campaigns. A refund scheme for end-of-life leisure craft has been implemented, and a number of other measures to limit marine litter and the spread of microplastics are being considered. Steps are being taken to reduce the unnecessary use of disposable plastic items, including the introduction of bans on some of these items.

The Norwegian Directorate of Fisheries is continuing its annual retrieval programme for lost fishing gear. In the pilot project Fishing for Litter, participating vessels can deliver marine litter caught in their fishing gear in port free of charge. Work is under way to develop a permanent scheme for disposing of waste caught in fishing gear. A producer responsibility scheme for fisheries and aquaculture equipment is being planned. An app has been launched for recreational fisheries, to enable people to report lost fishing gear. As a result, many diving clubs have helped to clear up traps and pots. In 2018, local diving clubs recovered 1883 traps and pots.

The ocean as a food source

A clean and healthy marine environment is an essential basis for adequate supplies of nutritious, safe food.

Good monitoring data and overall knowledge are vital for benefit and risk assessments, and for documenting that the food we harvest is safe and healthy. An integrated approach is essential to maintain the role of the oceans as a food source for the future. This requires cooperation between all the sectors and stakeholders that are responsible for different elements of food safety in the food value chain.

Sea anemones, bryozoans and filigree worms on the seabed. Photo: Mareano/Institute of Marine Research.

The 2030 Agenda

Norway's work on clean and healthy oceans supports the 2030 Agenda, especially these Sustainable Development Goals:

The Interreg project Circular Ocean demonstrated that waste such as dumped nets and ropes can be used as a resource. The Norwegian University of Science and Technology (NTNU) took part, along with research institutes in Ireland, Scotland, England, and Greenland. The project ran for three years from 2015. Photo: Circular Ocean.

International cooperation and ocean diplomacy

Compliance with and further development of the Law of the Sea and other international agreements are a priority for the Government. Norway will continue to be a reliable partner in international ocean cooperation and an attractive trading partner. Ensuring clean and healthy oceans and sound marine management are also important in Norwegian development policy.

Norway will be an active advocate for clean and healthy oceans and knowledge-based, sustainable management of ocean resources.

Norway is working internationally to promote understanding of the links between a healthy marine environment; integrated, ecosystem-based management; sustainable use and value creation. Key elements of Norway's ocean policy are promoting, developing and defending the Law of the Sea; promoting conservation and sustainable use of marine ecosystems; contributing to knowledge-based management; supporting the implementation of international ocean-related instruments; and advocating an integrated approach to marine management that will underpin a sustainable ocean economy. These elements will play a part in achieving the UN Sustainable Development Goals. Norway is pursuing an active international ocean policy founded on principles of good governance, and gives weight to cooperation on ocean-related issues through regional and international organisations and through bilateral cooperation.

The High-level Panel for a Sustainable Ocean Economy

Norway has assumed international leadership in the efforts to resolve the challenges relating to management of the world's oceans and release the potential of the ocean economy through the establishment of the High-level Panel for a Sustainable Ocean Economy. Its purpose is to create international awareness of the economic importance of the oceans, and of the need to promote sustainable use of marine resources and maintain a healthy marine environment as a basis for value creation. The High-level Panel consists of 14 heads of state and government and is chaired by Prime Minister Erna Solberg. It will present its report and recommendations for action to the UN Ocean Conference in Lisbon in June 2020. The panel will cooperate with the scientific community, the business sector and civil society to develop innovative, future-oriented proposals for a sustainable ocean economy that will also safeguard clean and healthy oceans.

The Our Ocean Conference

Norway is hosting the Our Ocean Conference in October 2019, gathering leaders of countries, the business community, the scientific community and civil society. Norway will announce its own commitments at the conference, and mobilise to get other countries, organisations and businesses to do the same. A central theme of the conference is that knowledge-based, integrated ocean management is a key to secure preservation as well as use of the ocean.

Work within the United Nations

Action to promote sound ocean management through UN bodies is important for Norway. At the UN General Assembly, and particularly through the annual resolutions on oceans and the law of the sea and on sustainable fisheries, Norway advocates an integrated, sustainable oceans policy. Important UN forums for the oceans include the International Maritime Organization (IMO), the Food and Agriculture Organization (FAO), the UN Environment Programme (UNEP), the International Seabed Authority (ISA), the UN Educational, Scientific and Cultural Organization (UNESCO), and the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM). The next major UN ocean conference will take place in 2020, and Norway will play an active part in reviewing and ensuring progress towards implementation of SDG 14 on life below water. Many of the challenges that must be dealt with are local or regional, and Norway is taking an active role in a

Marine plastic litter is a global problem with local impacts. The Norwegian Coastal Administration and the Norwegian Centre for Oil Spill Preparedness and Marine Environment are exploring the possibilities of cooperation between volunteers and professionals, for example in the Circular Cleanup project. Here the 'Plastic Pirates' are at work on Lepsøya island, Møre og Romsdal. Photo: Norwegian Coastal Administration.

number of regional fisheries management, research, environmental and navigation organisations.

In 2017, the UN General Assembly decided to establish a negotiating conference to develop a new legally binding agreement under the UN Convention on the Law of the Sea. It is to draft an agreement on the conservation and sustainable use of marine genetic resources, area-based management measures, impact assessments and capacity building. In Norway's view, it is important to take into account existing agreements and sectoral rules in addition to the importance of an integrated management regime. The work on the agreement, which is one element of Norway's ocean policy, is given high priority and affects a wide range of Norwegian ocean interests.

Environmental and climate change is a serious global problem. It is expected that the report of the Intergovernmental Panel on Climate Change on the ocean and cryosphere in a changing climate, which is to be presented in September 2019, will raise awareness of the role and importance of the oceans in efforts to reduce greenhouse gas emissions. Norway will therefore seek to integrate considerations relating to climate change, sea level rise and ocean acidification into relevant international institutions and processes.

The contribution of the business sector to achieving the Sustainable Development Goals

It is vital to ensure that the business sector is involved in solving ocean-related challenges. Norway is therefore supporting the Action Platform for Sustainable Ocean Business, an initiative of the UN Global Compact. Its main goal is to develop principles and guidelines for how businesses can help with progress towards the 17 Sustainable Development Goals and apply the 10 principles of the UN Global Compact specifically with reference to the ocean industries. In order to achieve this, three work streams have been established: mapping ocean governance and regulation, identifying opportunities for sustainable growth, and establishing basic principles for sustainable economic activity in the oceans.

The Norwegian Investment Fund for Developing Countries (Norfund) is the key funding instrument of the Norwegian aid sector for promoting business development and job creation in the private sector in developing countries. Norfund makes profitable, sustainable direct investments, and offers risk capital and loans to small and medium-sized enterprises, thus encouraging job creation and development in the renewable energy, finance, food production and agricultural sectors. The Government will strengthen its dialogue with the Norwegian business sector on opportunities for investment in ocean industries in developing countries as a means of contributing to value and job creation.

Safety and security at sea

Safe and secure navigation at sea is vital for Norway as an important maritime nation, and global trade flows depend on stability and predictability. International cooperation is needed to ensure compliance with international law, including navigational rights. Norway

Laying and hauling in oil booms off Dar es Salaam. The Norwegian Coastal Administration's Department for Emergency Response is running the exercise. Photo: Ken Opprann/Norad.

is a party to ReCAAP, a government-to-government agreement on combating piracy and armed robbery against ships in Asia. It also does a considerable amount of work in both East and West Africa. In East Africa, Norway focuses on ensuring the prosecution of pirates, while in West Africa, it assists coastal states with their efforts to deal with the problems of piracy and armed robbery against ships.

Sharing knowledge on clean and healthy oceans

Norwegian experience and practices as regards management of resources, the environment and ocean industries are of interest to other countries. Norway supports a number of aid projects on improving the ocean environment, sustainable management of marine resources and ocean-related activities. These projects form part of initiatives such as the Oil for Development and Fish for Development programmes. The Government will develop an Ocean for Development programme, which could become an important tool for promoting knowledge-based, integrated marine management in developing countries.

Marine litter

Norway is seeking to raise awareness of marine litter and gain support for efforts to deal with it. The problems arise to a large extent because of a lack of systems for waste management on land, but there are also ocean-based sources of marine litter. Norway's initiative in the UN Environment Assembly was particularly important, and has resulted in a resolution to eliminate discharges of plastic waste to the oceans. Norway is advocating a new global framework to reduce marine litter. Norway has also won support for intensifying efforts to deal with marine litter under existing agreements and organisations, for example the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and the International Maritime Organization (IMO). Norway will intensify its efforts to win international backing concerning the need for a global agreement on the prevention of marine litter. The Government has launched a development programme to combat marine litter, and has allocated NOK 1.6 billion for the period 2019–2022 to assist developing countries in preventing and managing marine litter and microplastics. The Government is also developing a strategy to intensify efforts to deal with environmental crime both nationally and internationally.

Food from the ocean

The Norwegian Government is working to strengthen the role of seafood in improving food safety and nutrition, both nationally and globally. Norway has cutting-edge knowledge and expertise in sustainable production of safe, healthy seafood, and on the links between seafood and health. At the request of the World Health Organization (WHO) and FAO, Norway has established a global action network called Sustainable Food from the Oceans and Inland Waters for Food Security and Nutrition as part of the UN Decade of Action on Nutrition (2016–2025).

The reduction of food waste makes economic sense, makes more food available and reduces pressure on the environment. On Norway's initiative and with

In certain areas, satellites are the only possible communications infrastructure at sea. They are particularly important for navigation and search and rescue operations. Under the UN Committee on the Peaceful Uses of Outer Space (COPUOS), Norway has proposed the inclusion of two ocean-related goals in the Space2030 agenda: a) to promote and strengthen the use of outer space for a sustainable ocean economy. b) to promote and strengthen the use of outer space to improve access to data and broadband globally, with a particular focus on developing countries and areas with poorly developed onshore infrastructure. Photo: UN COPUOS.

Norwegian financing, FAO has developed an online guide to reducing food waste in the value chain for fish, which will be launched in 2019.

Overfishing and illegal fishing

Overfishing of important fish stocks is a major problem worldwide. For many years, Norway has been heavily engaged in international cooperation to promote sustainable fisheries management and satisfactory inspection and enforcement regimes. Up to 90 % of the fish resources Norway harvests are from stocks shared with other countries. Norway concludes annual agreements with other countries on the management of these resources. The agreements are intended to ensure that harvesting of the stocks is sustainable. The agreements are therefore based on independent scientific advice on quotas and management measures.

Illegal, unregulated and unreported fishing (IUU fishing) is a widespread global problem. Norway played an active part in the efforts to put in place a legally binding agreement on port state measures to prevent, deter and eliminate illegal, unreported and unregulated fishing.

Fisheries crime

It is estimated that as much as 31 % of the global seafood harvest is from illegal catches. This problem is closely linked to various other forms of crime such as economic crime, human trafficking, customs and tax evasion and money laundering, and to the problems associated with tax havens. There is a 'blue shadow economy' that is undermining a sustainable and fair blue economy. Norway is taking the lead in the global efforts to address organised fisheries crime and the blue shadow economy. In 2018, Norway took the initiative for an international ministerial declaration on transnational organised crime in the global fishing industry, which provides a basis for partnerships on this issue with a number of countries, most of them developing countries. With the 'Blue Justice' initiative, the Government is seeking to address the specific needs of developing countries in addressing fisheries crime. Fisheries crime is a widespread and complex problem, and developing countries in particular are losing substantial resources and potential revenues. In addition to the loss of tax and export revenues, fisheries crime also has negative impacts on food safety and the living conditions of coastal populations. Norway is providing developing countries with assistance in this area.

International trade

The Norwegian ocean industries are highly export-oriented, and depend on open and effective international markets to ensure value creation and jobs in Norway. An open global trade regime is an essential basis for the demand for Norwegian goods and services. As highlighted in the *Strategy for Export and Internationalisation*, the Government's priorities include supporting ongoing and new processes to develop the multilateral trade regime under the World Trade Organization (WTO) and negotiating free trade agreements with priority countries. This approach reflects developments in trade patterns, and reduces customs barriers and other barriers to trade.

The research vessel *Dr. Fridtjof Nansen* is a key asset of the EAF-Nansen Programme, which is implemented by FAO and funded by Norway. The Institute of Marine Research is responsible for operating the vessel, and supplies the programme with scientific services. The Norwegian Agency for Development Cooperation (Norad) owns the research vessel. Photo: Kjartan Mæstad/Institute of Marine Research.

World Expo 2020

Norway will be participating in Expo 2020 in Dubai in the United Arab Emirates. The main focus for Norway's participation will be the oceans. One important goal is to strengthen the international competitiveness of the Norwegian ocean industries. Another aim is to strengthen Norway's commercial relations with countries in the Middle East, Africa and Asia, which are important markets for the Norwegian ocean industries. Norwegian participation in Expo 2020 is a joint venture between the Government and the business sector.

Regional involvement in international work

The Government is supporting the counties' involvement in European cooperation. International cooperation provides a framework for the implementation of regional development actions. From 2020, Norway's regional reform will result in new, larger counties that will provide a better basis for doing this. It is important for the county authorities to maintain their knowledge about the opportunities provided by participation in EU programmes in time ahead. These include opportunities to strengthen research and innovation under the Horizon 2020 programme and to take part in initiatives such as JPI Ocean. Interreg Europe is relevant to Norwegian groups involved in the development of ocean industries, while the Erasmus+ programme provides education opportunities and work mobility between countries in Europe.

The 2030 Agenda

Norway's work on international cooperation and ocean diplomacy supports the 2030 Agenda, especially these Sustainable Development Goals:

The ice-class research vessel *Kronprins Haakon* in the Fram Strait in 2018. Photo: Alicia Hamer/Norwegian Polar Institute.

Norwegian Prime Minister Erna Solberg addressing the UN General Assembly in New York in September 2018. Photo: UN Photo/Cia Pak.

Future priorities

The oceans are a high priority for the Government, and ocean policy is constantly evolving. The Government is continuing to follow up the measures presented in the ocean strategy *New growth, proud history* and the white paper *The place of the oceans in Norway's foreign and development policy*, both from 2017.

In 2019–2020, the Government will present white papers on the quota system for the fisheries, on revision of the management plan for the Barents Sea–Lofoten area and updating the management plans for the Norwegian Sea and the North Sea–Skagerrak, on space policy, on Arctic policy and on maritime policy.

The Government has already achieved a great deal, and will give special priority to three areas in its future ocean policy: skills and digitalisation, climate change and green shipping, and value creation along the entire coastline.

Technologies, working methods and the use of digital tools are developing rapidly in the ocean industries. It is important to ensure that educational programmes are appropriately designed so that people have the right skills to make use of the opportunities provided by technological advances.

The Government's target is for Norway to be a low-emission society by 2050. The green shipping initiative will be strengthened as a means of making progress towards the Government's climate targets. The new LowEmission Research Centre, which will develop technology for the Norwegian continental shelf, is also in operation from 2019.

Norway's regional reform will take effect from 2020. National and regional strategies for business development must be coordinated so that a sound, integrated national ocean policy can be developed.

The Government will:

- Promote the development of technology for the **carbon capture, transport and storage** in reservoirs on the continental shelf, with the ambition of achieving a cost-effective solution for full-scale CCS in Norway, provided that this also results in technology development internationally.

- Present an action plan for **green shipping** including the ambition of halving emissions from domestic shipping and fishing vessels by 2030, which will involve promoting the use of zero- and low-emission solutions in all vessel categories.

- Take steps to ensure the availability of adequate and relevant skills, which are vital for sound management, restructuring and sustainable growth in the ocean industries, including **strengthening digital skills**.

- Continue to promote **equality and decent working conditions**, and strengthen efforts against work-related crime and undeclared employment.

- Promote a closer dialogue between the regional and national levels by establishing a **forum for dialogue on ocean issues** between the Government, the counties, the Sámediggi and representatives of the coastal municipalities. Others will be invited to take part when appropriate.

- Provide a framework for **dynamic local communities** in all parts of the country. When the regional reform takes effect, the counties will have more responsibility for regional industrial and skills policy. The sustainable use of marine resources must also have positive effects for local communities.

- Establish an **integrated framework for ocean-based industries**, including area based measures for petroleum activities in the integrated ocean management plans.

- Maintain **predictable frameworks** for the established ocean industries – oil and gas, shipping and the seafood industry – and provide a good basis for emerging, sustainable ocean industries by developing a good legal and other framework for offshore aquaculture, seabed minerals and offshore wind power.

- Open one or two areas for licence applications for **renewable offshore energy** production and adopt regulations under the Offshore Energy Act.

- Manage **seabed minerals** in line with the new Seabed Minerals Act, and consider opening parts of the Norwegian shelf for commercial and sustainable extraction of seabed minerals.

- Develop a legal framework for **offshore aquaculture** that will facilitate further growth in the aquaculture sector.

- Follow up on the **review of industry-oriented funding instruments**, aiming to improve and simplify current schemes in order to promote value creation and profitable jobs.

- Continue to focus on developing **knowledge of the oceans**, sound management, clean and productive oceans, healthy and safe seafood and sustainable industrial development in line with the priorities of the long-term plan for research and higher education, and to ensure Norwegian participation in the **UN Decade of Ocean Science** for Sustainable Development and in ocean-related activities in the new EU framework programme for research and innovation.

- Continue to support the development of **research infrastructure and test facilities** for the ocean industries; this includes the Ocean Space Laboratories project.

- Further develop the **Norwegian Centre for Oil Spill Preparedness and Marine Environment**, among other things by exploring the possible establishment of test and exercise facilities for testing oil spill response technology.

- Promote innovation by supporting **research and technology development across the ocean industries**, and continue to focus on digitalisation and autonomous operation in the ocean industries.

- Promote sustainability and blue economy as a key area of **Norway's Arctic policy**.

- Contribute to international developments in **sustainable ocean management** through active participation in UN ocean processes, through the High-level Panel for a Sustainable Ocean Economy, as organiser of the Our Ocean Conference 2019, through ocean dialogues with selected countries, and by continuing to promote measures designed to achieve the UN Sustainable Development Goals by 2030.

- Secure **market access** through trade agreements and support the promotion of Norwegian ocean industries abroad, for example through Innovation Norway's the branding project for the ocean industries, 'Branding the Blue' and the digital marketplace 'The Explorer', and by using the oceans as the theme for the Norwegian pavilion at Expo 2020 Dubai.

- Continue efforts to **combat marine litter and microplastics** nationally and internationally, for example by following up the initiative for an international agreement, through cooperation with individual countries, and through the Norwegian aid system.

- Continue Norwegian **development cooperation in support of sustainable management** and value creation in ocean-based industries through the programmes Ocean for Development, Oil for Development and Fish for Development

- Strengthen its dialogue with the Norwegian business sector on opportunities for investment in **ocean industries in developing countries** and thus contribute to value and job creation.

- Seek to protect **blue vegetation and blue forests** through efforts nationally and internationally in order to maintain carbon storage and safeguard marine biodiversity.

- Prepare a strategy to intensify **efforts to deal with environmental crime** both nationally and internationally.

- Intensify efforts to **prevent and expose fisheries crime** in Norway and internationally. One channel for international work will be the 'Blue Justice' initiative to assist developing countries combat fisheries crime.

- Highlight the importance of the **oceans as a food source** in national and international work, for example by following up the Global Action Network Sustainable Food from the Oceans and Inland Waters for Food Security and Nutrition as part of the UN Decade of Action on Nutrition (2016–2025). Work will include support for measures and initiatives to improve utilisation of resources and reduce food waste and the further development of good monitoring systems for documenting healthy and safe seafood.

Further information

The Government's pages on ocean-related matters
https://www.regjeringen.no/en/topics/havet/id2603523/

High-level Panel for a Sustainable Ocean Economy
http://oceanpanel.org

Barentswatch
collects, develops and shares information about Norwegian coastal and ocean areas.
https://www.barentswatch.no/en/

Integrated Marine Management Plans
information on Norway's ecosystem-based marine management plans
https://tema.miljodirektoratet.no/no/Havforum/Forside/English/

MAREANO
maps depth and topography, sediment composition, habitats and pollutants on the seabed in Norwegian waters
http://www.mareano.no/en

Norwegian Petroleum
Fact about the Norwegian oil and gas industry
https://www.norskpetroleum.no/en/

Innovation Norway
is Norway's main instrument for innovation, and promotes the Norwegian business sector abroad and Norway as a tourist destination.
https://www.innovasjonnorge.no/en/start-page/

Norwegian Centres of Expertise
are mature clusters with a national position in the Norwegian Innovation Clusters programme.
http://www.nceclusters.no/about-nce/

Research Council of Norway
promotes high-quality research and innovation to build up knowledge for a sustainable future.
https://www.forskningsradet.no/en/

Enova
provides funding for projects to bring about Norway's transition to a low-emission society.
https://www.enova.no/about-enova/

Siva
Is a government funding instrument that invests in property and facilitates the development of businesses and knowledge communities throughout the country.
https://siva.no/?lang=en

Norwegian Seafood Council
responsible for marketing initiatives for fish and fish products abroad and at home
https://en.seafood.no

Norwegian Maritime Authority
the regulatory authority for Norwegian-registered vessels and for foreign vessels calling at Norwegian ports.
https://www.sdir.no/en/

Directorate of Fisheries
the advisory and executive body for the fisheries and aquaculture administration.
https://www.fiskeridir.no/English

Norwegian Petroleum Directorate
the advisory and executive body for the petroleum administration.

https://www.npd.no/en/

Norwegian Coastal Administration
the advisory and executive body for the ports and navigable waters administration.

https://www.kystverket.no/en

Norwegian Environment Agency
a directorate under the Ministry of Climate and Environment, Its main responsibilities are reduction of greenhouse gas emissions, nature management and pollution prevention.

https://tema.miljodirektoratet.no/en/

Norwegian Energy Partners
promotes the interests of Norwegian energy companies in international markets.

https://www.norwep.com

Petroleum Safety Authority Norway
the supervisory body for safety, emergency preparedness, and working environment in the petroleum industry.

https://www.ptil.no/en/?lang=no_NO

Norwegian Food Safety Authority
the Government supervisory agency for plant, fish and animal health, and food safety.

https://www.mattilsynet.no/language/english/

Norwegian Veterinary Institute
national centre of expertise in biosecurity in fish and land animals.

https://www.vetinst.no/en

Institute of Marine Research
one of the largest marine research institutes in Europe.

https://www.hi.no/en

Norwegian Polar Institute's
activities focus on environmental management needs in the polar regions.

https://www.npolar.no/en/

Nofima
research and development for the aquaculture, fisheries and food industries

https://nofima.no/en/

Norwegian Seafood Research Fund
research funding for the fisheries and aquaculture industries

https://www.fhf.no/fhf/about-fhf-english/

Centre for the Ocean and the Arctic
is to strengthen the knowledge of the blue economy in the North.

https://oceanarctic.org

Norwegian Centre for Oil Spill Preparedness and Marine Environment
is a nationally and internationally leading centre of expertise on oil spill preparedness and response and marine plastic litter.

https://www.marintmiljo.no/frontpage-norwegian-centre-for-oil-spill-preparedness-and-marine-environment/

The Norwegian Export Credit Guarantee Agency
a government financial enterprise that provides long-term guarantees and helps Norwegian companies in all sectors to secure funding and export contracts.

https://www.giek.no/frontpage/

The Fram Centre
High North Research Centre for Climate and the Environment.

https://www.framcentre.com

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