



Norad

An ocean of opportunities

Norway's Fish for Development programme



Acknowledgements

The report is primarily based on annual reports, progress reports and reviews from Norad, FAO and the Institute of Marine Research in Norway.

The countries presented are mainly based on bilateral collaboration with Norwegian partners. Not all countries where Norway has development cooperation in fisheries are included – the countries and interventions presented in this report have been selected based on solid documentation and the availability of information.

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Preface

With estimates showing that there will be 10 billion people on the planet by 2050, more food, more energy, more means of transport and more jobs will clearly be needed. Ocean-related activities, in particular sustainable fisheries and aquaculture, will become increasingly important for meeting these needs and for implementing the United Nations Sustainable Development Goals (SDGs).

For more than a thousand years Norwegians have lived by the sea, off the sea and for the sea. We have long experience of fisheries management and would like to share this with other countries.

The Fish for Development Programme (FfD) was established in 2016 against a backdrop of increased focus on the oceans and coastal areas. It was also a response to the need for more effective aid initiatives to promote sustainable use of living marine resources. The programme ties in closely with our Government's emphasis on the oceans in our foreign and development policy, as presented in the recent white paper on this topic (Meld. St. 22 (2016–2017)).

There is growing demand for knowledge about the oceans and marine resource management. Norway has shared its experience and expertise in this field for many years through fisheries and aquaculture cooperation. One of the key objectives of our development cooperation is to build capacity in our partner countries. For example, we provide assistance with drawing up effective legislation, and developing sound monitoring, inspection and enforcement systems. Knowledge-based partnerships on fisheries and aquaculture management, including partnerships with the private sector, have produced good results in many countries.

I am proud to present the first report from the Fish for Development programme. I hope that you will find it interesting.

NIKOLAI ASTRUP

Minister of International Development,
Norway

←
Sudanese fishermen collect today's catch.
PHOTO: JAN ERIKSEN/NORAD

THE FISH FOR DEVELOPMENT PROGRAMME





Introduction

Norwegian management and research institutions have long traditions in fisheries management, cooperation with other countries and industries, as well as technology in the fisheries sector. Due to Norway's experience in resource and fishery management, several developing countries have requested collaboration.

Many developing countries have considerable potential in fisheries and aquaculture for improving food security and nutrition, employment and business development, export revenue and taxes, and economic growth. Yet, non-sustainable fisheries and fisheries crime, uneven resource distribution, climate change and pollution are undermining living conditions and food security.

Over 59 million people are engaged in fishing and aquaculture worldwide, and between 660 and 820 million are entirely or partly reliant on fisheries. At the same time, millions of people that live close to or below the extreme poverty line are dependent on fisheries, especially small-scale fisheries.

Trade in fish and fish products reached USD 143 billion in 2016 and was expected to have reached a new peak at about USD 152 billion in 2017. Developing countries play a key role in this trade and during the past 40 years, the growth rate of exports from developing countries is increasing faster than from developed ones.

Fisheries is an international sector. Marine fish stocks are, to a large extent, shared between countries and international waters. UN treaties and several international agreements have been established in order to manage the oceans and their fish stocks. Additionally, codes of conduct for responsible fisheries, international plans of actions, and a number of regional agreements and protocols between countries have been established in order to manage marine fisheries internationally.

Multilateral agencies, first and foremost FAO, but also ILO, IMO, INTERPOL, UNEP, UNDP and UNODC are all important actors in promoting good management practice and crime prevention in fisheries. Important multilateral banks such as IFAD and the World Bank provide funding and loans for developing the sector. Support to developing countries through multilateral channels is therefore important.

The report begins by explaining how the Fish for Development programme works. Secondly, the scope of activities and financial support is presented. Lastly, the report offers examples of the results and some challenges faced by the projects.

Norwegian fisheries development cooperation has a long history, going back to the 1950s. Since then, many different development projects have been carried out. The Fish for Development programme is now operational and manages most of the fish-related projects in Norway's development cooperation. As such, it is appropriate to assess past projects and results. This report thus aims to consolidate and show the broad scope of recent Norwegian fisheries cooperation, prior to the establishment of the Fish for Development programme – from 2012 to the end of 2017.

←
Norwegian technology is used in some
Vietnamese offshore fish farming.
PHOTO: KRISTOFFER KOKVOLD/NORAD

The Fish for Development programme

In 2015 the Norwegian government launched the Fish for Development (FfD) programme, and in the second half of 2016, the FfD Secretariat was established in Norad. 2017 was the first fully operational year for the Secretariat.

FfD is responsible for coordinating all development projects supported by Norway in the field of fisheries and aquaculture so that Norwegian competence and expertise can be of greater benefit to developing countries. The programme will extend over a five-year period that began in 2016.

FfD is a result of the increased political focus on the marine and maritime area. The UN Sustainable Development Goal (SDG) 14 – ‘Conserve and use the oceans, seas and marine resources for sustainable development’ – is a key goal of FfD. Many of the other goals, especially SDG 1 (‘End poverty in all its forms everywhere’) and 2 (‘End hunger, achieve food security and improved nutrition and promote sustainable agriculture’), also underpin FfD.

FfD is focusing on the following main components:

- > Resources management, legislation and the combating of illegal fishing and fisheries-related crime
- > Research and education, including the EAF Nansen Programme
- > Private sector development, including aquaculture

Through FfD, the Norwegian government wants to utilize Norway’s comparative advantage to respond to the request for advice and capacity building in sustainable fisheries and aquaculture from developing countries.

The Inter-ministerial Advisory Group consists of the Ministry of Foreign Affairs (MFA) and the Ministry of Trade, Industry and Fisheries (MoTIF) and oversees the work of FfD (Figure 1). This group provides advice to the programme at the strategic level. MFA makes the strategic decisions concerning FfD, and has established the frameworks and guidelines for the programme.

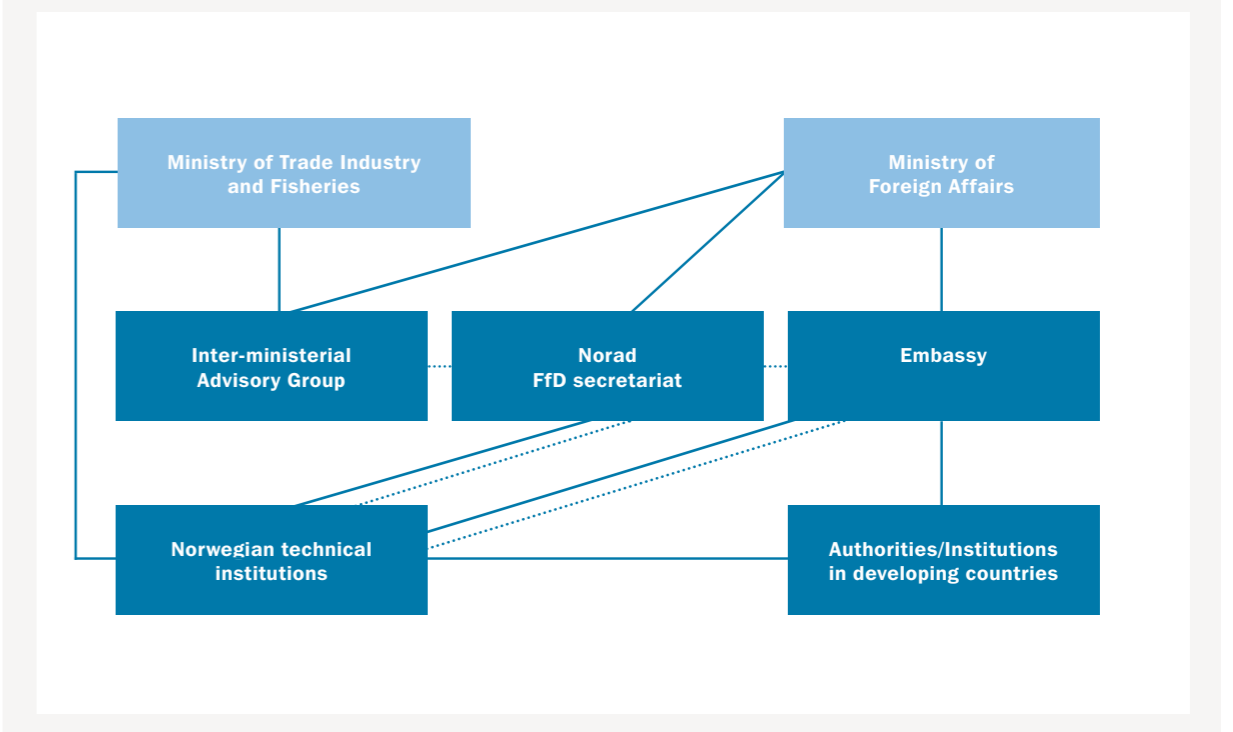
When developing and operationalizing a country programme, FfD draws upon the expertise and experience of Norwegian institutions in fisheries management and universities when collaborating with respective institutions in FfD partner countries.

NORWEGIAN GOVERNMENT INSTITUTIONS PARTICIPATING IN FISHERIES COOPERATION PROJECTS

- > Ministry of Trade, Industry and Fisheries
- > Directorate of Fisheries
- > Institute of Marine Research
- > Norwegian Veterinary Institute
- > Norwegian Food Safety Authority
- > University of Tromsø
- > University of Bergen
- > Norwegian University of Science and Technology (NTNU)
- > Norwegian University of Life Sciences (NMBU)
- > Norwegian National Advisory Group Against Organized IUU-fishing (FFA, Fiskeriforvaltningens analysenettverk)

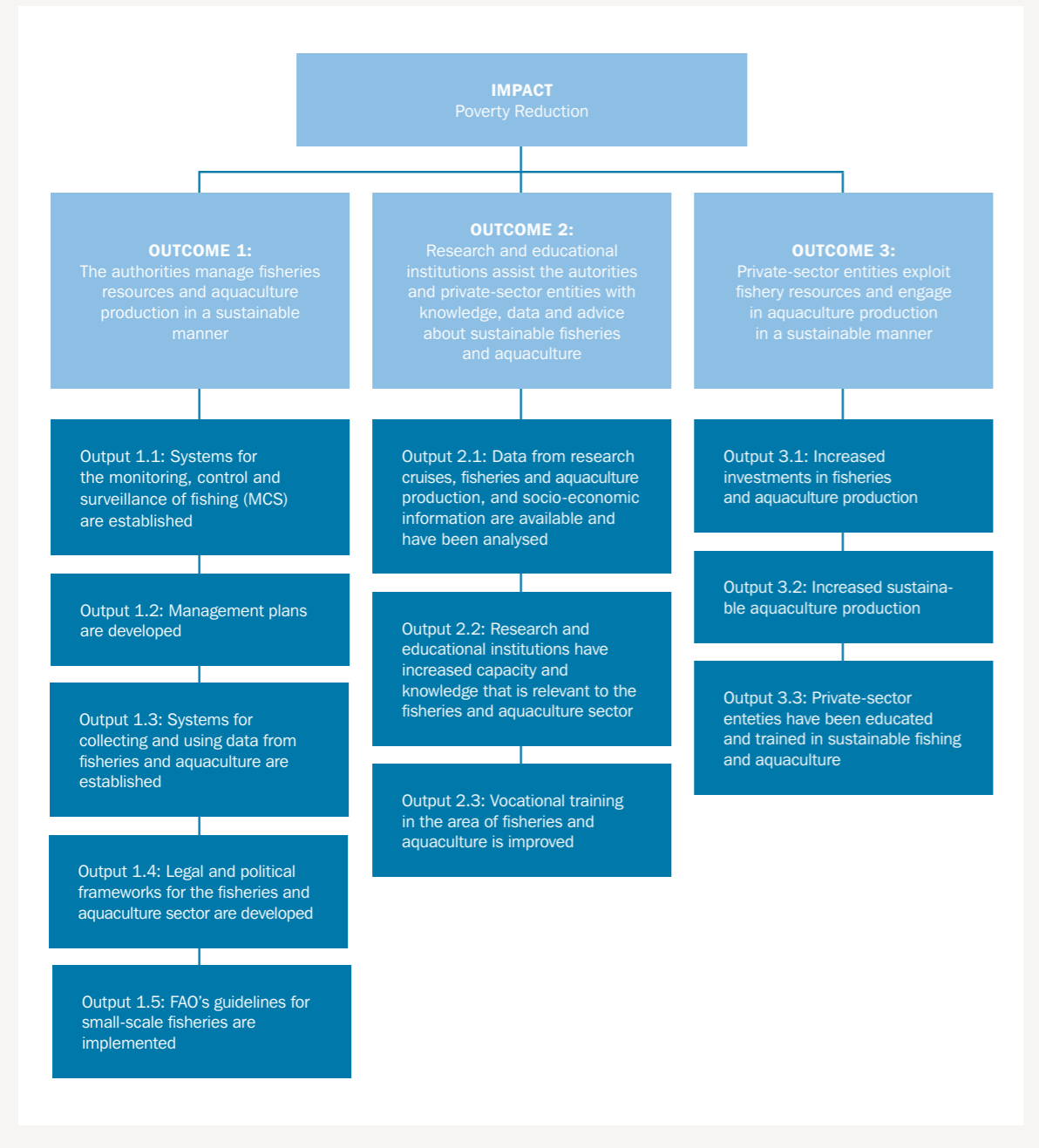


FIGURE 1: FFD'S ORGANIZATIONAL STRUCTURE



The Fish for Development programme's goal hierarchy

FIGURE 2: FFD'S RESULTS HIERARCHY WITH RESULTS FOR ALL THREE LEVELS: IMPACT, OUTCOME AND OUTPUT. ADOPTED IN 2017



OUTCOME 1: The authorities manage fisheries resources and aquaculture production in a sustainable manner

In order to achieve sustainable use of fishery and aquaculture resources, it is necessary, but not sufficient, to have good laws and regulations, functioning institutions and relevant data and knowledge. These are also important to safeguard ecosystems and food security based on a country's own priorities and policies and competent fisheries administrations. International conventions and agreements set the parameters for national legislation. Good, effective fishery management is also necessary in order to build up a modern, sustainable fisheries and aquaculture industry that can attract capital. The authorities must ensure that there are good framework conditions for the industry – such as infrastructure, production regulations, allocation of access, and granting of licenses – each based on national policies and international agreements.

Based on experiences from the Norwegian management model, together with the countries' own experiences and policies, FfD will assist developing countries in developing a sustainable management of their respective fisheries and aquaculture sectors. Norwegian knowledge is, to a certain degree, generic by nature and can be adapted to challenges in developing countries, e.g. adaptation of local legislation to global frameworks and to the relevant voluntary international guidelines in the sector.

Illegal, unreported and unregulated (IUU) fishing is a major problem. The practice drains countries of capital and revenue and thus hampers living conditions. Reduced illegal fishing helps promote more sustainable fisheries, a better economy for society and those who are operating legally, and improved food security and profitability.

OUTCOME 2: Research and educational institutions assist the authorities and private sector entities with knowledge, data and advice about sustainable fisheries and aquaculture

Our knowledge of how much fish there is in the sea, where the fish stocks are located and what environment they live in, makes us capable of managing these resources so that the fish population may be exploited at a sustainable rate. Research and educational institutions provide relevant knowledge and data to decision-makers, industries and businesses, and civil society so that these actors in turn may have dialogue and coordination with the authorities in order to ensure good management and predictability. Increased use of research and education in a country is crucial to



COMBATING IUU FISHING OFF WEST AFRICA

In national waters off the coast of West Africa, the Norwegian foundation Trygg Mat Tracking (TMT) assists six countries – Liberia, Ivory Coast, Ghana, Togo, Benin and Nigeria – in uncovering illegal fishing through the established West Africa Task Force (WATF). The effort has led to the identification and expulsion from national waters of vessels engaging in illegal fishing since 2014. Through the projects TMT and Stop Illegal Fishing (SIF), which are non-governmental organizations and implementing partners, provide technical support to the WATF. The Task Force is governed by the Fisheries Committee for the West Central Gulf of Guinea (FCWC). The project provides information on fishing operators in the region, facilitates information exchange between countries, and supports the countries' supervisory activities, such as vessel inspections. In addition, the national authorities are given guidance in application of the Port State Measures Agreement.

capacity development, which is the basis for more competent public and private sector institutions.

For more than 40 years, the Nansen Programme has had a Norwegian marine research vessel (RV) at its disposal, dedicated to use in development cooperation. The new RV Dr. Fridtjof Nansen will provide a more effective platform for developing methods for future consulting and sustainable fisheries management. The vessel is an important arena for knowledge and network development to promote regional cooperation. Researchers and public administrators from partner countries are given education and training on board, which will include the processing of data, schooling in modern methods for calculating the size of fish stocks and insight into harvesting principles used in public administration. This will increase the understanding of the need for sustainable exploitation of the marine resources, and should result in better fishery management.



PHOTO: KRISTOFFER KOKVOLD/NORAD

NORHED (THE NORWEGIAN PROGRAMME FOR CAPACITY DEVELOPMENT IN HIGHER EDUCATION AND RESEARCH FOR DEVELOPMENT)

NORHED is a Norwegian funded programme for the capacity building of higher education and research institutions in developing countries. In the current programme period, six countries and seven universities are participating in two regional south–south–north projects in fisheries- and aquaculture-related aspects. Both project periods are from 2013–2018 and have a budget of NOK 18 million.

- > Capacity Building for Training and Research in Aquatic and Environmental Health in Eastern and Southern Africa (TRAHESA): Universities collaborating are from Tanzania, Kenya, Uganda, and Zambia with the Norwegian University of Life Sciences as a Norwegian partner.
- > Incorporating Climate Change into Ecosystem Approaches to Fisheries and Aquaculture Management in Sri Lanka and Vietnam: University of Tromsø and University of Bergen are jointly partnering with respective universities in Sri Lanka and Vietnam.

Competence building is a core element of all Norwegian development assistance. The Norwegian government has published White Paper no. 25 (2013–2014) to the Parliament, 'Education for Development': education and research here include education and training at all levels, including on-the-job-training. In this component, arrangements are made for increased investment in vocational education and training, education at the university college level, and research.

One of the projects which has received support for vocational training is in Vietnam: *Vocational Skills* for Vietnamese Aquaculture Industry, carried out by the Confederation of Norwegian Enterprise (NHO) and the Vietnam Chamber of Commerce and Industry (VCCI),

who are partnering with other companies to provide Vietnamese vocational students with skills that are in demand in the formal labour market. This project will develop completely new training programmes for the aquaculture industry based on the industry's own needs, as well as launch national initiatives to promote the status and benefits of vocational training to enterprises, policy makers, and potential students and their families.

OUTCOME 3: Private sector entities exploit fisheries resources and engage in aquaculture production in a sustainable manner.

There is a tremendous growth potential in both marine and freshwater aquaculture to ensure food and employment for a rapidly growing world population. Growth and development can occur through the transfer of knowledge about modern production technology, the development of aquaculture facilities, infrastructure, product development and sales. Education and training of private-sector entities is therefore important in order to achieve a better exploitation of resources. It is particularly important to ensure a focus on structures that affect women's participation.

It is necessary to attract more investment to increase sustainable production. This will provide more food, ensure better nutrition and help promote employment and economic growth. The authorities in the countries must have a good understanding of the risks and bottlenecks (e.g. regulations, fish health, infrastructure and terms and conditions for export, etc.) in order to be able to exercise good management and facilitate predictability. Based on Norwegian experience, FfD can help increase knowledge and competence, provide education and training about production, diseases, feed, breeding, markets, the strengthening of the value chain, etc. and help ensure that the authorities set proper framework conditions.

Norad has support schemes to stimulate investment 'in the south'. Such support should be considered in the context of FfD, and complementarity must be sought wherever possible.

Civil society organizations can also be relevant institutions to help improve production and value chains in connection with both aquaculture and small-scale fisheries.



VIETNAM

PHOTO: KEN OPPRANN/NORAD

FISH FEED PRODUCTION IN VIETNAM

In 2007 and 2008, Norad granted the company EWOS, now Cargill about NOK 0.8 million in support of a preliminary investigation to assess the possibility of establishing itself as a fish feed producer in Vietnam. Based on these preliminary surveys, EWOS has taken over a feed plant and has established a local company, which employed about 180 people in 2015. The establishment was supported with NOK 1.2 million for training of the employees at the production unit. In 2014, EWOS was again given a grant from Norad, this time NOK 2.4 million, for test production using local ingredients, training and HSE measures. This has contributed to a significant increase in the proportion of locally produced feed ingredients at the expense of imported fishmeal, improved HSE training for employees and subcontractors, and the education of 500 Vietnamese fish farmers in how optimal feeding can increase efficiency and quality in production.



ANGOLA

PHOTO: BØRN SERIGSTAD/HAVFORSKNINGSINSTITUTTET

PILOT PRODUCTION OF FISH SILAGE IN ANGOLA, USE OF WASTE FROM FISHING AND FISH PROCESSING

The Norwegian Private Company Hordafor AS received NOK 2.5 million between 2013–2014. Purpose: The pilot was to test whether silage could be a method for taking care of the fish waste from fishing and processing, and to use the silage for animal feed. Test feedings were carried out at 10 different farms, which mainly produced poultry and pork. Training of personnel and veterinarians were important capacity building aspects of the pilot project. The feed produced increased growth and reduced deaths among pigs and chickens (one pig farm experienced a reduction in rate of deaths from 40% to 0% during the period). The results have been positive in relation to production methodology, quality and composition of silage as well as the effect of using the fish silage in animal feed.

As Angolan bottom fish trawlers have been obliged to land all fish by catch onshore since 2012, production of some of it for animal feed through silage has proved to be very positive. Positive health and environment effects are also expected if this production takes off. The silage production continued in two locations in Angola after Hordafor AS withdrew in 2014, and both are still in operation.

Development cooperation in fisheries and aquaculture

The amount of the total development cooperation in fisheries and aquaculture between 2013–2017 was NOK 993.1 million, constituting 0.8% of Norway's total development aid (Table 1).

2017 constitutes the first full year of FfD, and the increase seen this year compared to previous years shows a commitment from the government of Norway to increase funding for this sector (Fig. 3). The new Nansen Programme is an example of this, as the latest agreement with The Food and Agriculture Organization of the United Nations has extended the programme to incorporate more funding for institutional development and capacity building. The downward dip in 2016 can be attributed to a decrease in bilateral support.

TOTAL DISBURSED BY REGION

The importance of non-regional assistance, which relates to a great extent to the use of multilateral channels, is also evident from Fig. 4. The support for global initiatives that do not specify a certain region have been prioritized because marine fisheries face global challenges. Many fish stocks often migrate through international waters and are governed by international agreements and treaties. The Nansen Programme constitutes a major part of the support and is registered as in Fig. 4. The programme has received NOK 398.1 million in support for the programme through FAO, between 2013 and 2017.

FIGURE 3: NORWEGIAN DEVELOPMENT COOPERATION IN FISHERIES AND AQUACULTURE 2013-2017* (MILLION NOK)

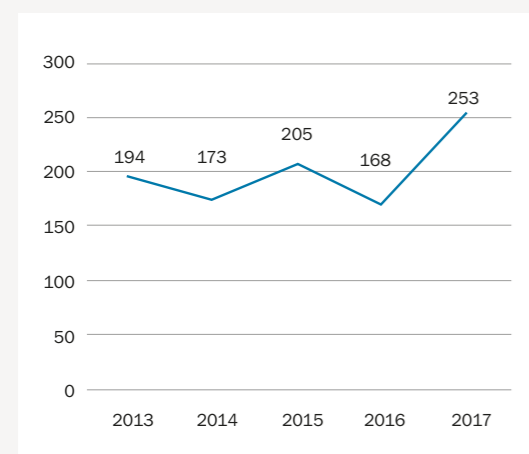


Figure 3. Total Norwegian development cooperation in fisheries and aquaculture from 2013 to 2017.

* Bilateral (including multi-bilateral) development aid to DAC-sector 313 – Fisheries. Norfunds investments are not included.



The Royal Norwegian Society for Development (Selskapet for Norges Vel) reports for 2017, that two aquaculture projects in Madagascar promoting tilapia and seaweed farming among local farming/fishing households have had positive results in increasing the income levels of the households. Income increased to USD 74 per month for 208 tilapia producers (a third were women), and to USD 20 per month for 309 seaweed farmers (half were women). The top 14% consistently earned above 30 USD per month and top producers above 100 USD per month.

The climate resilience of the targeted small aquaculture and coastal communities also improved during the project period, by improved tilapia pond protection techniques, better cyclone warning systems for the farmers, limited no-take zones around aquaculture areas maintaining seagrass growth and coral outcroppings within the marine protected area Velondriake. Women's participation is seen as a major contributor to achieving success, as they are active in managing, feeding and harvesting fish ponds.

However, as a region, Africa has received nearly four times more support than Asia, the second biggest recipient (Fig. 4), from 2013 to 2017.

TOTAL DISBURSED BY PARTNER

From 2013 to 2017, NOK 290 million was channelled bilaterally to support cooperation with government institutions in specific countries, between fisheries and aquaculture management institutions, public research institutions or universities. NOK 578.9 million was granted through multilateral channels – of this, the Nansen Programme received a major portion. Global initiatives in combating illegal fishing and fisheries crime are, to a large extent,

channelled through multilateral organizations due to the nature of the problems being transnational.

Civil society organizations have received NOK 107.1 million – approximately 11% of total funding. Of these, Norwegian civil society organizations received NOK 89.6 million.

Support through the private sector is mainly channelled through Norwegian companies, in support of feasibility studies for investments in developing countries, training of staff, environmental adjustments or infrastructure needed in order to venture into engagements in selected cooperating countries.

TABLE 1: PER CENT OF FISHERIES AND AQUACULTURE DEVELOPMENT OF TOTAL BILATERAL DEVELOPMENT COOPERATION * ** 2013-2017.

	2013	2014	2015	2016	2017	TOTAL 2013-2017
Development cooperation on fisheries and aquaculture (million NOK)	194	173	205	168	253	993
Total bilateral development cooperation (million NOK)	23 579	22 730	24 708	27 034	23 817	121 868
Per cent of development cooperation of total bilateral development cooperation	0,8%	0,8%	0,8%	0,6%	1,1%	0,8%

* Bilateral (including multi-bilateral) development aid to DAC-sector 313 – Fisheries. Norfunds investments in fisheries are not included
 ** Includes all thematic/geographic earmarked development aid. Core funding to multilaterals and administration costs are not included.

FIGURE 4: NORWEGIAN DEVELOPMENT COOPERATION IN FISHERIES AND AQUACULTURE BY REGION* (MILLION NOK)

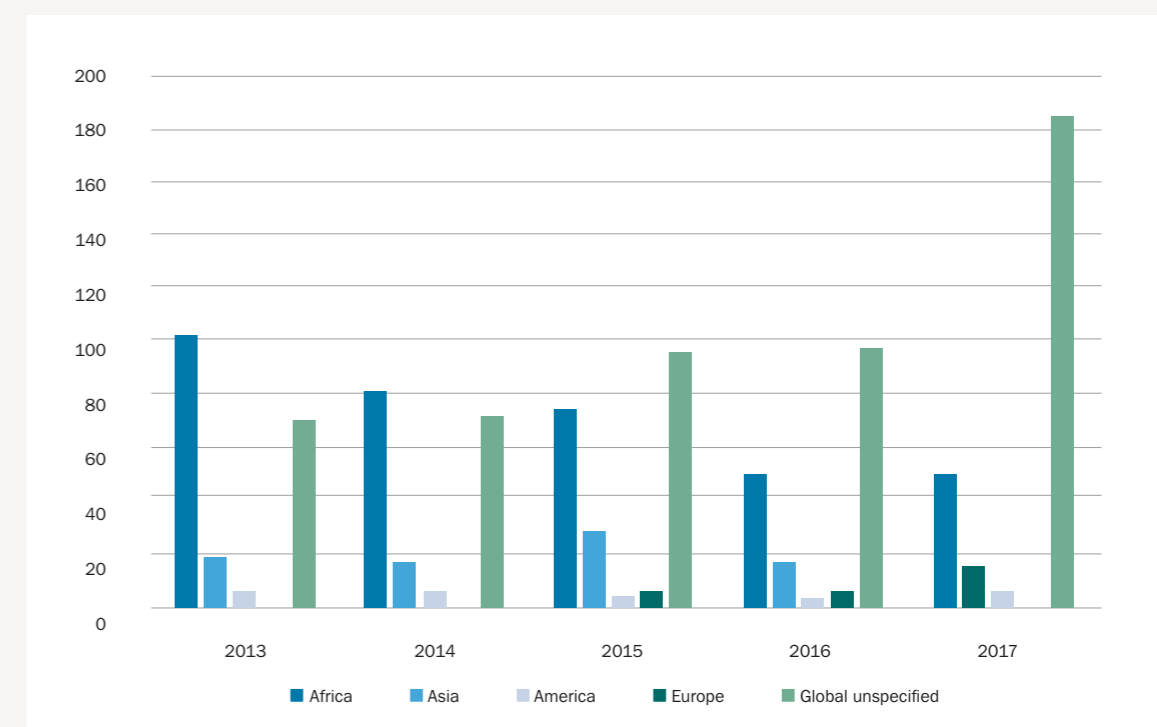


Figure 4. Total Norwegian development cooperation in fisheries and aquaculture from 2013 to 2017 by region.

* Bilateral (including multi-bilateral) development aid to DAC-sector 313 – Fisheries. Norfunds investments are not included.

THEMATIC AREAS

In Figure 5, the amount of funding for development cooperation in fisheries and aquaculture cooperation is given by each of the thematic areas supported by FfD:

- > Resources management, legislation and the combating of illegal fishing and fisheries-related crime
- > Research and education
- > Development, including aquaculture

The funding of the Nansen Programme was slightly lower in 2016 because of repairs to the old research vessel, which explains the slight reduction in research and education in 2016 (Fig. 6). When taking this into consideration, the distribution among these three categories is relatively stable through the five year period, and also indicates where FfD expects funding to be used in the future.

Bilateral support has gradually been reduced to fewer countries, while global and regional support has increased from 2013 to 2017 (Table 2). An ambition of FfD is to focus and concentrate support to fewer countries.

FIGURE 5: TYPE OF NORWEGIAN FISHERIES AND AQUACULTURE DEVELOPMENT COOPERATION FROM 2013-2017

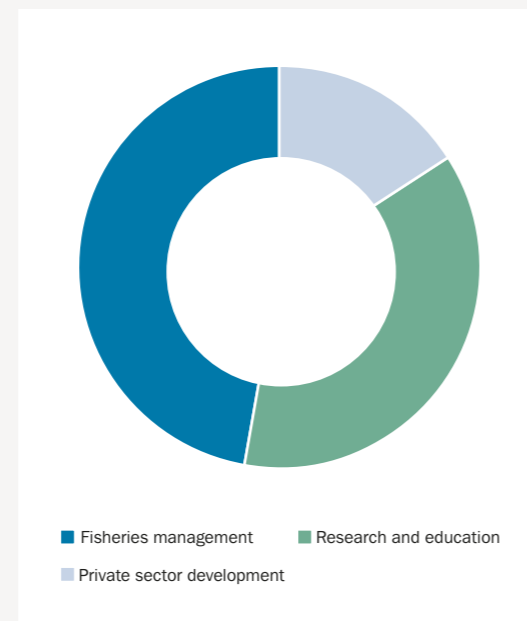


Figure 5. Total Norwegian development cooperation in fisheries and aquaculture from 2013 to 2017 by type of support. In 2017, it was decided to categorize the support to the Nansen Programme as research and education, while previously this support was regarded as fisheries management. For consistency, the whole period of Nansen support, from 2013 to 2017, has been categorized as research and education.

* Bilateral (including multi-bilateral) development cooperation to DAC-sector 313 – Fisheries. Norfunds investments are not included.

FIGURE 6: TYPE OF NORWEGIAN FISHERIES AND AQUACULTURE DEVELOPMENT COOPERATION*, **

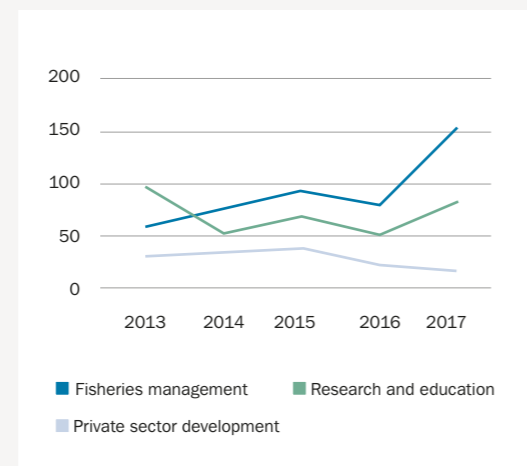


Figure 6. Total Norwegian development cooperation in fisheries and aquaculture from 2013 to 2017 by type of support. In 2017, it was decided to categorize the support to the Nansen Programme as research and education, while previously this support was regarded as fisheries management. For consistency, the whole period of Nansen support, from 2013 to 2017, has been categorized as research and education.

* Bilateral (including multi-bilateral) development cooperation to DAC-sector 313 – Fisheries. Norfunds investments are not included.

TABLE 2: FISHERIES AND AQUACULTURE DEVELOPMENT COOPERATION BY TYPE OF AGREEMENT PARTNER, 2013-2017*. MILLION NOK.

Agreement partner	2013	2014	2015	2016	2017	TOTAL 2013-2017
Multilateral organizations	90,4	79,5	109,0	108,2	191,8	578,8
Public sector in recipient country and Norway/other donor countries	82,7	74,3	68,3	33,8	30,9	290,0
Norwegian NGOs	10,2	12,0	18,1	19,7	29,6	89,6
International and local NGOs	5,4	3,5	3,6	5,0	0,0	17,5
Private sector	5,5	3,4	5,9	1,2	1,1	17,2
Total	194,2	172,7	204,9	167,9	253,4	993,1

*Bilateral (including multi-bilateral) development cooperation to DAC-sector 313 – Fisheries. Norfunds investments are not included.

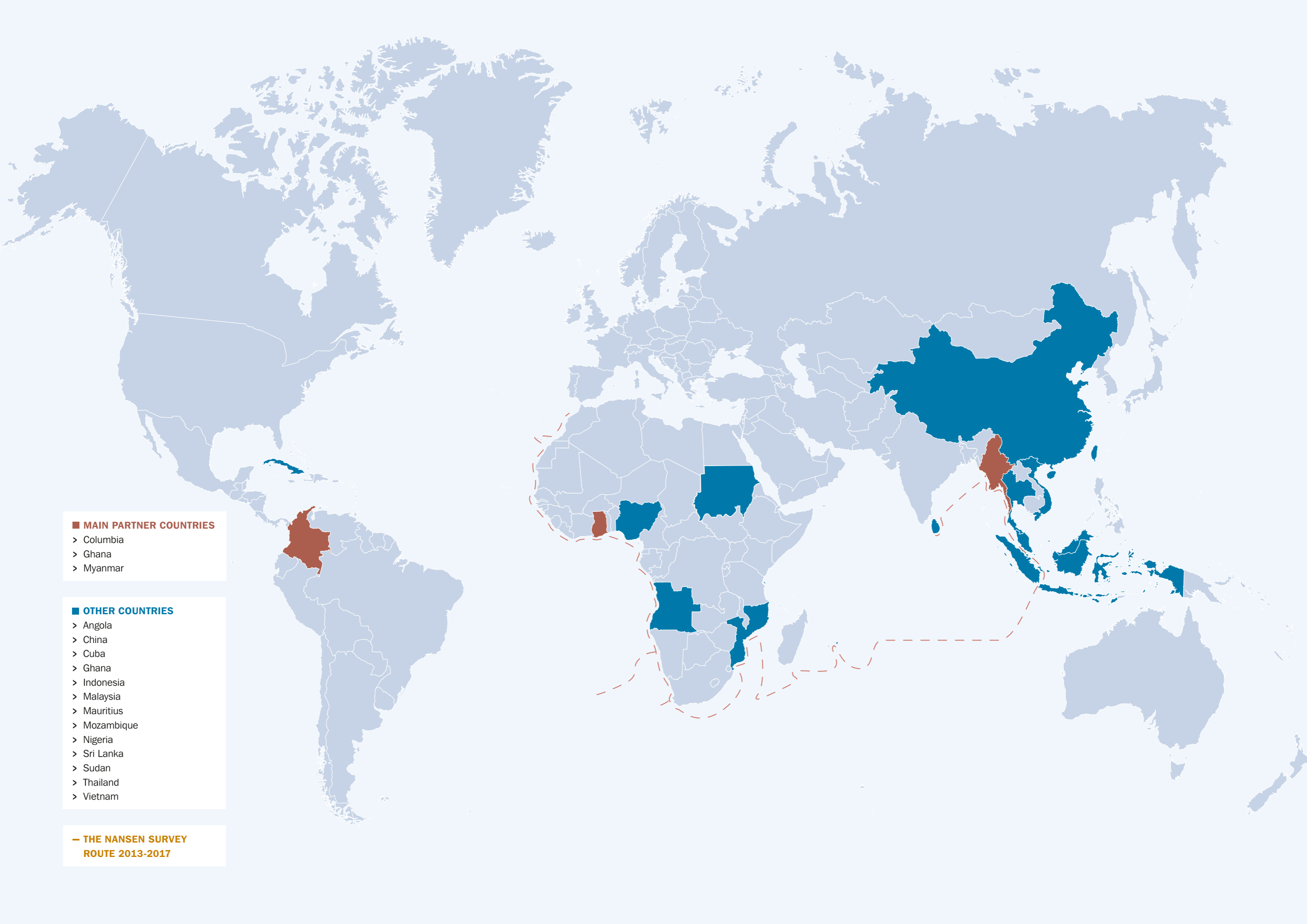
TABLE 3: COUNTRY, REGIONAL AND GLOBAL DEVELOPMENT COOPERATION IN FISHERIES AND AQUACULTURE *, 2013–2017. MILLION NOK

Country specific development cooperation in fisheries and aquaculture	2013	2014	2015	2016	2017	TOTAL 2013-2017
Mozambique	54,7	42,5	42,2	16,0	21,2	176,7
Sudan	4,3	3,0	11,0	10,0	11,0	39,3
Somalia	15,0	15,0	0,0	4,1	0,9	35,0
Madagascar	5,7	6,1	6,1	5,3	4,7	27,9
East Timor	3,8	3,2	6,9	8,3	3,4	25,6
Cuba	3,8	4,3	2,9	2,0	3,7	16,6
Indonesia	2,0	4,0	8,0	1,3	0,3	15,7
Angola	6,7	0,8		2,4	1,8	11,7
Sri Lanka	3,6	0,6	0,9	1,0	5,0	11,1
Vietnam	2,4	2,2	4,6	1,7	-0,1	10,9
Ukraine			4,1	4,1	1,0	9,2
Myanmar	0,1		4,2		3,0	7,3
Thailand	2,5	2,0	1,2	0,5	0,8	7,0
China	1,5	0,8	0,8	1,5	1,5	6,0
Kenya	0,8	0,5	2,0	0,2	0,3	3,8
Malaysia	1,7	0,9		0,8		3,4
Ghana			0,2	0,8	2,2	3,2
Brazil	0,6	1,2	1,0			2,7
Nigeria	0,4		-0,2	1,0	0,9	2,1
South Africa	0,2	0,1	1,5	0,1		2,0
Mauritius	0,8	0,7			-0,1	1,4
India	0,1	0,7		0,3	0,3	1,4
Colombia					1,3	1,3
Nepal		0,8		0,3	-0,3	0,7
Cambodia			0,5			0,5
Serbia			0,4	0,1		0,5
Cape Verde		0,4				0,4
Bangladesh	0,3					0,3
Nicaragua	0,3					0,3
Tanzania	0,1					0,1
Total country-specific development cooperation in fisheries and aquaculture	111,3	89,8	98,3	61,9	62,8	424,0
Global unspecified	69,8	71,3	95,5	96,1	184,0	516,7
Sub-Saharan Africa region	9,1	10,7	11,1	9,7	5,8	46,5
Africa regional	3,5	0,7			0,5	4,8
Asia Regional	0,5	0,2			0,4	1,0
Caribbean regional				0,2		0,2
Total regional and global unspecified development cooperation in fisheries and aquaculture	82,9	82,9	106,6	106,0	190,7	569,1
Total	194,2	172,7	204,9	167,9	253,4	993,1



MAFUNZO

**COOPERATING
COUNTRIES**



■ **MAIN PARTNER COUNTRIES**

- > Columbia
- > Ghana
- > Myanmar

■ **OTHER COUNTRIES**

- > Angola
- > China
- > Cuba
- > Ghana
- > Indonesia
- > Malaysia
- > Mauritius
- > Mozambique
- > Nigeria
- > Sri Lanka
- > Sudan
- > Thailand
- > Vietnam

— **THE NANSEN SURVEY
ROUTE 2013-2017**

MAIN PARTNER COUNTRIES

In a limited number of FfD partner countries, there will be a more comprehensive approach, covering broader areas of cooperation. The MFA has selected Colombia, Ghana and Myanmar as the main partner countries in the programme. For each of these countries, exchange visits, mapping, exploring, and planning possible cooperation areas and institutional cooperation have been carried out. Implementation of the main activities in these 3 countries have not yet started. In addition, other countries with Norwegian fishery collaboration, some of which date back several years, are also part of FfD.



COLOMBIA

In 2017, Norad commissioned the Norwegian Institute of Marine Research to work with Colombian institutions on preparing plans for a cooperation between institutions in the two countries. Three exchange visits of experts have taken place, including a visit from Colombia to the Aqua Nor aquaculture fair in 2017.

Potential areas of collaboration include systems for better resource data and processing technology. In aquaculture, regulation, general management, area zoning and aquatic animal health are possible areas. Research and higher education cooperation is also likely to be included.

In Colombia, The National Aquaculture and Fisheries Authority (AUNAP), in cooperation with the Colombian Food Safety Authority (ICA) and others, are likely partners.

Norwegian cooperating institutions are the Institute of Marine Research in Norway, in cooperation with the Directorate of Fisheries, the Norwegian Veterinary Institute and universities. Depending on the areas of cooperation, other Norwegian institutions may be involved.



GHANA

Norway has received a formal request for cooperation from the Ministry of Fisheries and Aquaculture Development. In June 2017, an agreement for a pre-project aquaculture and fisheries cooperation between Ghana and Norway was signed. The Ministry of Fisheries and Aquaculture Development in Ghana will collaborate with the Institute of Marine Research and the Norwegian Directorate of Fisheries.

So far, possible areas identified for future cooperation are marine fisheries resources management, aquaculture with a focus on fish health, and the development of a vocational school for fisheries and aquaculture. Ghana will continue to be served by the Nansen Programme, under the Agreement with FAO. So far, Ghana has had 14 fisheries and environmental studies in its waters. Support in the area of combating illegal fishing in West Africa has been ongoing over the last four years, through Norad's funding of TMT (Trygg Mat Tracking), a Norwegian foundation.



MYANMAR

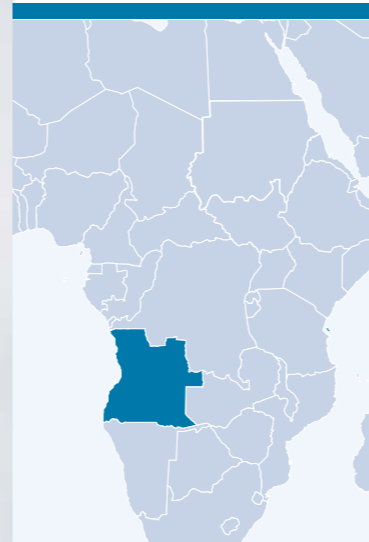
In 2017, Myanmar and Norway signed a memorandum of understanding (MoU) regarding cooperation in the fisheries and aquaculture sector within the fish for development programme. The MoU was followed by drafting of a project document for the future cooperation between the Department of Fisheries (DoF) in Myanmar and the Institute of Marine Research and the Directorate of Fisheries in Norway.

The main goal is to contribute to environmentally and socially sustainable economic growth of the marine fisheries and the marine aquaculture sector in Myanmar. The project intends to achieve this by improved sustainable management of marine off-shore fisheries, sustainable management of marine aquaculture production and improved capacity in government, research, and educational institutions to provide knowledge, data and advice on sustainable marine fisheries and aquaculture.

Key elements of the proposal is to establish a fisheries information system, training of DoF staff, support to the development of a sustainable marine aquaculture production and improve governance and legislation related to marine fisheries and aquaculture.



Angola



PROGRAMME DETAILS ANGOLA-NORWAY FISHERIES SECTOR MANAGEMENT COOPERATION PROGRAMME

Angolan partners: Angola Ministry of Fisheries,
Instituto Investigação Pesqueira (INIP)

Norwegian partners: Institute of Marine Research,
Directorate of Fisheries, National Institute of Nutrition
and Seafood Research (NIFES)

Disbursed 2017: NOK 1.8 million

Disbursed 2013–2017: NOK 11.7 million

Angola is endowed with rich fisheries resources, providing an important source of income for the coastal population. However, most fish stocks are considered to be overexploited, underlining the need for sustainable management of the fisheries.

GOAL FOR THE COOPERATION

To strengthen administrative, technical and managerial capacity in prioritized areas in order to promote ecologically and environmentally sustainable aquatic resource utilization and viable economic fisheries sector development in Angola. The Programme aims to contribute to a wide variety of complex challenges in the fisheries sector: improving the fisheries authorities management capabilities, including using scientific data, producing qualified scientific data and advice on fisheries stock development, upgrading capacities in food safety/hygiene to international standards, and developing a sea-farming industry and the establishment of marine protected areas.

MAIN ACHIEVEMENTS

A new fisheries data information system has been partly set into production in the Ministry of Fisheries and shall secure the necessary quality and flexibility in access to data relevant for research and management plans. Through training of Angolan scientists in Norway,

INIP has strengthened their capacity and ability to collect and analyse data for fishery management and to do research on ocean science. A review of the requirements of the laboratory and its status towards accreditation was carried out in 2017. This is crucial in order to get marine products certified for export.

MAIN CHALLENGES

There have been challenges in implementing the Programme and achieving expected results, due to the high ambitions and institutional issues. The economic downturn in Angola demonstrates their dependency on income from oil, and implicitly their need to diversify the economy, making fisheries even more important for food security. The economic downturn has also created pressures in the short term to increase catches of already vulnerable fish stocks, undermining the room for fisheries authorities to improve long-term sustainable management. The significant challenges in Angola regarding business development, transparency, corruption and governance are additional external factors.

←
Samples are taken of the seabed in an environmental monitoring study. The results lay the foundations for an integrated management of the ocean area.

PHOTO: BJØRN SERIGSTAD/HAVFORSKNINGSINSTITUTTET

China



PROGRAMME FACTS ENVIRONMENT AND AQUACULTURE GOVERNANCE (EAG) IN CHINA

Chinese partners: Yellow Sea Fisheries Research Institute (YSFRI), Chinese Academy of Fisheries Science (CAFS), Chinese Company partner: Zoneco Group Co., Ltd., Rongcheng Chudao Marine Science & Technology co. Ltd

Norwegian partners: Institute of Marine Research (IMR), Norwegian Peace Corps

Disbursed 2017: NOK 1.5 million

Disbursed 2013–2017: NOK 6 million

In China, aquaculture production is of major importance to food supply, traditional medicines, income and employment, and China is the largest producer in the world by a large margin. As production levels steadily increase, so do the challenges.

GOAL FOR THE COOPERATION

Increased exchange and advancement of the scientific knowledge base to develop aquaculture management systems in China and Norway, built using an ecosystem approach to aquaculture (EAA), and comprehensive and integrated management in both cooperating countries.

MAIN ACHIEVEMENTS

The numerical hydrodynamic model, named the Yellow Sea model, has been fully implemented for the Yellow Sea providing detailed information of the environment like current and temperature. The model is based on the NorKyst800 model operated for the Norwegian coast. The IMR and YSFRI have carried out monitoring of benthic impact from seaweed and shellfish aquaculture in Sanggou Bay, based on Norwegian monitoring framework. The monitoring is carried out at the same stations as in 2007 and is expected to provide information on the development of the benthic environment related to aquaculture activity over the

last decade. The Chinese industry partner Zoneco Group Co., Ltd. has promoted the Sea Ranching Research Center with participation from YSFRI and IMR. The centre has adopted several topics from the project and is regarded as a significant result from the collaboration between YSFRI and IMR.

A final conference for the project was held 9–10 November 2017 in Rongcheng, China. The conference summarized main outcomes from the project and addressed future opportunities and challenges for collaboration, also presented by several industry partners. The project has successfully carried out five exchanges of young scientists and their experiences and recommendations were discussed. The conference also involved several presentations linked to the EU-HORIZON 2020 project, 'Ecosystem Approach to Making Space for Aquaculture' (AquaSpace), with partnership from both YSFRI and IMR.

MAIN CHALLENGES

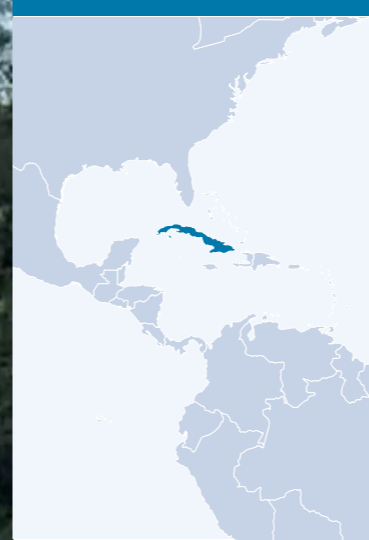
The project faced a political atmosphere between the two countries causing some obstructions at official processes above the institutional level. However, this had little impact on the project and the political situation between China and Norway from December 2016 has given strong initiatives and opportunities for continued cooperation between IMR and YSFRI.

←
Sanggou Bay in China is an extensive production area, where multiple species, such as seaweed and shellfish, are produced together.

PHOTO: LARS ASPLIN/HAVFORSKNINGSINSTITUTTET



Cuba



PROGRAMME FACTS DEVELOPMENT OF SUSTAINABLE MARINE AQUACULTURE IN CUBA

Cuban partners: Ministry of External Trade and Foreign Investment (MINCEX), Centre for Marine Research.

Norwegian partner: Norwegian Institute of Marine Research (IMR)

Disbursed 2017: NOK 3.7 million

Disbursed 2013–2017: NOK 16.6 million

Cuba wants aquaculture. The framework for private sector engagement needs improvement

GOAL FOR THE COOPERATION

Increased production of local marine fish by using environmentally sustainable aquaculture methods to achieve maximum benefits for the country and the Caribbean region. Immediate objectives include the establishment of a hatchery and on-growth production of cobia (*Rachycentron canadum*) in sea cages, basic handling and processing technology, evaluation of marketing opportunities including export, and competence building.

MAIN ACHIEVEMENTS

The project conducted a successful cycle of on-growth and processing of cobia to market size, with fry imported from Ecuador. Furthermore, net-pens imported from Norway proved suitable and durable. Moreover, the construction of the hatchery is now almost complete. The project also contributed to building competence in marine aquaculture in Cuba.

MAIN CHALLENGES

Despite the positive results from the project, there were also challenges. The scarcity of local inputs and administrative and bureaucratic hurdles, including delays in obtaining import and environmental licenses, slowed down the project.

Moreover, the country's gain is threatened by a difficult business environment, weakening demand for the project's most important potential product. Local marine aquaculture knowledge and technology, and uncertain long-term economic sustainability due to dependence on imported equipment and specialized feed is also a challenge.

←
Norwegian aquaculture equipment was tested in Cuba.

PHOTO: HANS PETER MELBY/NORAD



Indonesia

PROGRAMME FACTS

INDONESIA CAPACITY BUILDING FISHERIES AND AQUACULTURE

Indonesian partner The Ministry of Marine Affairs and Fisheries

Disbursed 2013–2017: NOK 15 million

Indonesia is the world's third largest aquaculture producer. Today, it is mainly fresh-water aquaculture that has been developed, however the country sees great potential in utilizing its vast ocean areas for marine aquaculture.

GOAL FOR THE COOPERATION

The development objective of the cooperation was improved marine-based livelihoods and food security in Indonesia.

MAIN ACHIEVEMENTS

The project has contributed to achieving the overall strategy and development goals for Indonesia related to marine aquaculture, including marine resource assessments and data made accessible for management decision-making, site selection and environmental impact monitoring tools, fish health diagnostics and vaccine knowledge, fishmeal production standardized and certified and value chain partnership established and branding analyzed.

The Norwegian research organisation Akvaplan-niva has provided training in site selection for mariculture using geographic information systems, training in intensification of marine fish hatchery production, and have contributed to develop guidelines on environmental impact monitoring.

One of the interesting spin-off activities that have emerged is that there are increased talks on links between fisheries crimes/IUU and fisheries management areas.

MAIN CHALLENGES

A review of the project found that the planned objective and outputs were very ambitious. There was a need for improvement and follow-up under on feed and fishmeal production. To develop a sustainable feed sector, private sector investment is essential.

OTHER SUPPORT

The Norwegian National Advisory Group Against Organized IUU-fishing (Fiskeriforvaltningens analyse-nettverk, FFA), with the secretariat in the Norwegian Ministry of Trade, Industry and Fisheries, have conducted several bilateral and regional activities in cooperation with Indonesian authorities. Capacity building activities have been carried out on fisheries crime with Indonesian fisheries authorities, tax authorities, customs, judges and prosecutors in the country.

←
Selling today's catch at the market in Bogor.
PHOTO: KEN OPPRANN/NORAD



Malaysia



PROGRAMME FACTS
SUPPORT TO REGULATORY FRAMEWORK FOR AQUACULTURE IN MALAYSIA

Malaysian partner: Department of Fisheries, Ministry of Agriculture and Agro-based Industry

Norwegian partners: Directorate of Fisheries, Norwegian Food Safety Authority, Institute of Marine Research, Norwegian Veterinary Institute

Disbursed 2013–2017: NOK 4.3 million

Aquaculture in Malaysia has developed to an important activity that provides employment and economic development in the country.

GOAL FOR THE COOPERATION

To contribute to sustainable development of aquaculture within Malaysian inland waters.

MAIN ACHIEVEMENTS

The drafted regulatory framework for inland and brackish water aquaculture was finalized and the regulations officially announced in Malaysia in 2017, and is expected to be implemented after necessary official approvals by the states. The Norwegian partners have provided input and advice in the process of drafting the inland aquaculture regulatory framework and the project has contributed to the development of good governance principles for selected aquaculture areas in Malaysia. The Malaysian capacity has also increased throughout the project. One master's student graduated in fish health at the University of Bergen in June 2016 and she now holds a position at the Department of Fisheries, Malaysia. Furthermore, a number of in-house trainings of young officials from

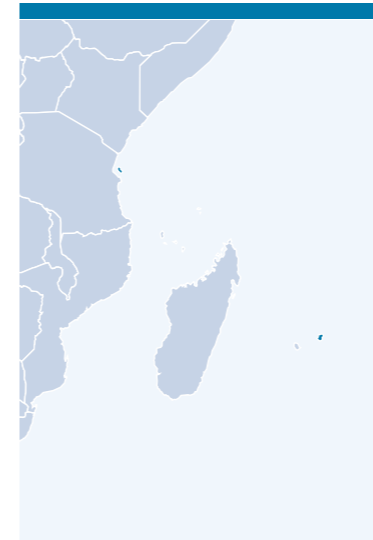
Malaysia have been carried out by the cooperating Norwegian institutions during the project period. The officials were also given an introductory course in the management system for aquaculture sites in Norway, through field visits and courses with Norwegian regulatory institutions. The project has contributed to Malaysia's increased capacity in the field of fish health management and government competence in aquaculture management.

MAIN CHALLENGES

Inclusion of other stakeholders and government agencies in Malaysia are needed for the regulatory framework to be in accordance with Malaysian government and state standards. Malaysia is a federation comprising 13 states and a new regulatory framework needs to take into account the individual state's standards. However, the regulatory framework for inland aquaculture has been introduced, and is planned to be applicable for all states in Malaysia.

←
Tilapia farming is an important economic activity in Malaysia's freshwater.
PHOTO: KEN OPPRANN/NORAD

Mauritius



PROGRAMME FACTS

COMBATING ILLEGAL FISHING, MARINE RESOURCES MANAGEMENT AND STRENGTHENING QUALITY OF FISH PRODUCTS

Mauritian partner: Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Islands (Fisheries Division)

Norwegian partners: Directorate of Fisheries, Norwegian Food Safety Authority, Institute of Marine Research, National Institute of Nutrition and Seafood Research, Norwegian Directorate of Maritime Affairs

Disbursed 2013–2017: NOK 1.4 million

Mauritius has abundant ocean resources and natural capital and a large exclusive economic zone under its management. It is dependent on a healthy ocean for many socioeconomic activities.

GOAL FOR THE COOPERATION

The objectives of the project were to establish a national plan of action (NPOA) against illegal, unreported and unregulated fishing (IUU), and to strengthen competence in marine resources assessment and in quality control of fish and fish products.

MAIN ACHIEVEMENTS

Mauritius now has a new and updated fisheries legislation ready to meet the challenges of the future, as well as international obligations. The new Fisheries Act (including a regulation framework for aquaculture) was finalized and will be implemented after official approval by Parliament. Furthermore, an NPOA against illegal, unreported and unregulated fishing was launched.

The project improved capacity building in several fields, and a number of workshops were conducted. Government officers were trained in fisheries planning,

project design and evaluation. About 20 officers from the different institutions were trained during each of these 2 workshops. A pool of 16 officers were trained in the vessel monitoring system, in order to combat IUU fishing. Furthermore, 14 officers were trained in basic statistics and fish stock assessment. 12 officers from various divisions were trained in hydro-acoustic theory and the use of acoustic equipment. Additionally, two students graduated with master's degrees in Applied Marine and Fisheries Ecology in Norway.

MAIN CHALLENGES

There were some delays in submitting the two new regulations for the aquaculture framework, due to amendments made in the fisheries act. Weather also limited some of the planned marine activities in fish stock assessment and trainings.

Some trainings provided competence in acoustics, but the acoustics instrument could not be installed on the research vessel due to structural issues.

←
The Indian Ocean provides livelihoods for many small-scale fisheries.
PHOTO: JAN ERIKSEN/NORAD



Mozambique



PROGRAMME FACTS

SUPPORT TO THE FISHERIES SECTOR OF MOZAMBIQUE, 2013–2017

Mozambican partners: Ministry of the Sea, Inland Waters and Fisheries (MMAIP) and its institutions

Norwegian partners: Institute of Marine Research, Directorate of Fisheries

Disbursed 2017: NOK 21.2 million

Disbursed 2013–2017: NOK 176.7 million

Capture fisheries remain the most important source of fish for many people in Mozambique, but have decreased in past decades. The potential for aquaculture here is high with its major rivers and lakes, long coastline and ideal temperatures.

🎯 GOAL FOR THE COOPERATION

The objective of the Programme is to strengthen fisheries authorities in their abilities to promote the development and management of small-scale fisheries and aquaculture activities, which have more potential to provide improvements in food security and nutrition through fish to the population, for a sustainable and viable use of aquatic resources. Following the support to capacity building in fisheries research and fish stock management, the focus has shifted to fresh water aquaculture.

🏆 MAIN ACHIEVEMENTS

The construction of an Aquaculture Development and Research Centre (CEPAQ) has been finalized. Production of fingerlings and a breeding program of the local *Tilapia mosambicus* was initiated. The Centre was opened by the President of Mozambique in November 2017.

Norges Vel and a local company established a pilot farm working to demonstrate tilapia farming as a full-time business opportunity for small to medium scale entrepreneurs in the region. Tilapia fingerlings are supplied by CEPAQ.

Through support to WWF Norway, the development of minimum terms and conditions for tuna fishing vessels in the South-West Indian Ocean provides a collective harmonized approach for improved fisheries governance and securement of income to the national governments through access fees and financial compensation paid by foreign fishing vessels. Mozambique has reviewed their license fee and access conditions for foreign vessels, seeking harmonization with other SWIO countries.

⚠️ MAIN CHALLENGES

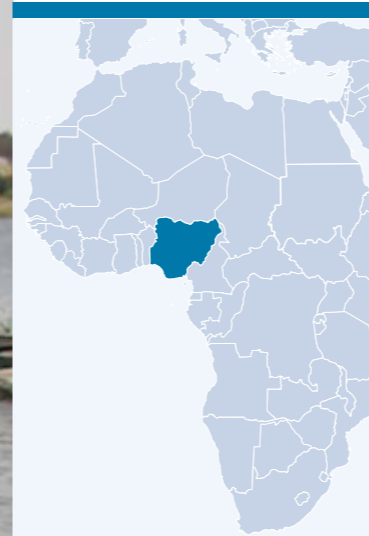
The structure of the original programme is fundamentally different from where it started, mainly due to the decrease in funding, which led to a deletion of a number of the sub-components and increased focus on aquaculture. While CEPAQ can provide tilapia with good growth potential, the sustainability will depend on the long-run development of the sector, for which an upcoming sector strategy will be critical. There is a need to establish a legal framework and regulations for inland aquaculture and create incentives for aquaculture development and increased private investments.

←
Women often play an important role in the post-harvest fishery activities.

PHOTO: KRISTOFFER KOKVOLD/NORAD



Nigeria



PROGRAMME FACTS

RESEARCH AND MONITORING SURVEYS AND UPGRADING AND OPERATING OF THE RESEARCH VESSEL BAYAGBONA

Nigerian partner: Nigerian Institute for Oceanography and Marine Research (NIOMR)

Norwegian partner: Institute of Marine Research

Project budget (total and in the reporting year): NOK 3,595,000

Disbursed 2017: NOK 0.9 million

Disbursed 2013–2017: NOK 2.1 million

Nigeria received a new research vessel in August 2014. As Nigeria has limited experience with operating research vessels, they requested Norwegian support to make the research vessel operational.

🔗 GOAL FOR THE COOPERATION

The goal of the programme is to ensure that the research vessel (RV) *Bayagbona* is set to conduct of research surveys. A fully operational *Bayagbona* can play an important role as a provider of data relevant for management of marine resources and the marine environment in Nigerian waters, as well as regionally.

🎯 MAIN ACHIEVEMENTS

Through a first visit to the research vessel from Norway in 2016, it was found that the scientific equipment and fishing gear needed adjustment and modifications, and the scientists and crew had good theoretical skills but needed more operational training. The inspection also showed that the vessel only had temporary certificates from Veritas. The lack of certification impacted the activities that could be carried out.

The following has been done:

The project first produced a status report for the vessel. Thereafter, software and hardware were

installed, enabling the cooperating partner to plan operations at sea. Further, all historical data from Nansen surveys were transferred to *Bayagbona*. Nigerian scientists have been trained in the processing of acoustic data.

In June 2017, a group of managers, scientists and ship personnel from the Nigerian Institute of Oceanography and Marine Research (NIOMR) received training in Norway on vessel management. Additionally, an Oil–Fish–Environment workshop, which may contribute to cooperation between the sector, was arranged in Lagos in July 2017.

As a result, the project activities have contributed to enabling NIOMR to operate their research vessel according to international standards. This involves the vessel's technical capability, the management of the vessel, collection of data and interpreting the collected data in line with scientific principles.

🚧 MAIN CHALLENGES

The vessel currently lacks international certification. The vessel also has technical challenges, e.g. related to trawling capability.

←
Artisanal fisheries provides vital food security for many of the poorest in society.
PHOTO: ESPEN RØST/NORAD



**PROGRAMME FACTS PROJECT I
TECHNICAL ASSISTANCE TO IMPROVE MANAGEMENT
OF THE FISH RESOURCES IN SRI LANKA**

Sri Lankan partners: National Aquatic Research and Development Agency of Sri Lanka (NARA), National Aquaculture Development Authority of Sri Lanka (NAQDA)

Norwegian partner: Institute of Marine Research

Disbursed 2017: NOK 1.1 million

Disbursed 2013–2017: NOK 5.3 million

In Sri Lanka, over 50% of consumed animal protein comes from fish. The Norwegian fisheries cooperation with Sri Lanka includes projects on all three of Fish for Development's components: fisheries management, research and education, and private sector engagement. From 2013 to 2017, NOK 11.1 million has been disbursed.

GOAL FOR THE COOPERATION

Development and establishment of a robust fisheries information system is essential to Sri Lanka for sustainable management of its fishery sector. The aim is therefore to improve management and conservation of the marine resources in Sri Lanka, and to provide NARA and the fisheries management at DFAR with the tools to determine the long-term maximum sustainable yield from the fishery for the benefit of the Sri Lankan community, local fishermen, fishing industry and consumers.

MAIN ACHIEVEMENTS

The project has two main work packages: Coastal Fisheries Statistics and collection of landing data, and Technical assistance and competence building in fisheries research at NARA. This project will be expanded and continue through 2019.

Coastal Fisheries Statistics and collection of landing data

In 2017, a statistical baseline survey covering all 15 districts provided invaluable information about the artisanal fisheries in the country. Based on this, a sampling strategy is being developed. Additionally, standards for data collection sheets of field data sampling have been designed.

Technical assistance and competence building in fisheries research

It is expected that the research vessel Smuddrika will now have a significantly improved marine research capacity, after having completed upgrades at a Colombo shipyard, based on Norwegian suggestions. Moreover, a vessel management committee and a survey committee for effective operations have been established. Capacity building in survey and sampling design, as well as in fish abundance estimation, has also been carried out. Four Sri Lankan scientists took part in a research survey and shore-based training in Bergen, Norway.

MAIN CHALLENGES

There is a need for better inclusion of the Department of Fisheries and Aquatic Resources and the Ministry of Fisheries and Aquatic Resources and Development in the project to ease the cooperation between the institutions. The project has had implementation delays due to capacity problems on both sides, and the intradepartmental collaboration is challenging. This has slowed the collection of coastal fisheries statistics and landing data.



**PROGRAMME FACTS PROJECT II
FORMULATION OF A NEW FISHERIES
AND AQUACULTURE POLICY FOR SRI LANKA**

Sri Lankan partners: Ministry of Fisheries and Aquatic Resources

Norwegian partner: Ministry of Trade, Industry and Fisheries

Disbursed 2017: NOK 3.4 million (first year)

GOAL FOR THE COOPERATION

The goal of the project is to improve fisheries and aquaculture management in Sri Lanka. On the request of the Sri Lankan government, technical assistance by the Norwegian Ministry of Trade, Industry and Fisheries has been provided in order to develop and formulate a national fisheries policy for Sri Lanka.

MAIN ACHIEVEMENTS

The policy formulation was finalized during 2017, and has been through consultations throughout the country. The new policy was submitted to the Cabinet of Ministers in early 2018. Furthermore, a plan for updating the National Aquaculture Development Authority Act has been prepared. The capacity of the Legal Officers of the Ministry was enhanced by providing 3-month internships at the FAO Legal Office in Rome. The project has recently been expanded with two work packages, which aim to bring fisheries biology closer to management decisions and to increase regional cooperation.

MAIN CHALLENGES

Coordination and capacity of government institutions remain a hurdle for advancement of this policy. Changing of government personnel is also slowing progress.



**PROGRAMME FACTS PROJECT III
INVESTMENT STUDY AQUACULTURE,
A CONSULTANCY ASSIGNMENT**

Sri Lankan partners: Ministry of Fisheries and Aquatic Resources, National Aquaculture Development Authority of Sri Lanka (NAQDA)

Norwegian partner: RR Consult through tender

Project budget: NOK 3,595,000

Disbursed 2016: NOK 0.5 million

PRIVATE SECTOR SUPPORT

The Investment Study was finalized at the end of 2016, and included a number of recommendations to Sri Lanka in order to achieve increased investments for aquaculture and offshore farming.

In order to attract private companies to establish operations in Sri Lanka, Norad supported preliminary studies for five different Norwegian companies between 2013 and 2017. In total, NOK 1.8 million has been disbursed. So far, two Norwegian companies, working together with a Sri Lankan company, are in the process of establishing operations in the country.



Sudan



PROGRAMME FACTS
**BUILDING INSTITUTIONAL CAPACITIES FOR THE SUSTAINABLE
 MANAGEMENT OF THE MARINE FISHERY IN THE RED SEA STATE (REPUBLIC OF SUDAN)**

Sudanese partners: Marine Fisheries Administration Red Sea State, Red Sea State University – Faculty of Marine Sciences and Fisheries, Red Sea Research Centre Port Sudan; implemented by the United Nations Industrial Development Organization (UNIDO)

Norwegian partners: Institute of Marine Research, University of Bergen

Disbursed 2017: NOK 11 million

Disbursed 2013–2017: NOK 39.3 million

The Sudanese part of the Red Sea harbours rich natural habitats with many endemic marine species and a pristine coastline with undisturbed coral reefs. Managed sustainably, these ecosystems represent key resources for future wealth for the Sudanese.

GOAL FOR THE COOPERATION

The project aims to build institutional capacities for the sustainable management of the marine fisheries in the Red Sea State of Sudan, through mapping the marine resources, strengthening the capabilities of the partner institutions, and developing and maintaining a database on fish stocks and fish landings in the Red Sea State. This will provide the knowledge base for the elaboration of strategic plans for the development of the marine fishery as well as for policy recommendations and management instruments required for the sustainable use of marine fish as a resource of crucial significance for livelihoods and food security.

MAIN ACHIEVEMENTS

The methodology for a catch sampling system has been developed, and the collection of fisheries statistics is being partly implemented by the local inspectors. This is the foundation for sustainable

fisheries management as well as for marine ecosystem-based management, and this monitoring system will assist them in future resources management. Capacity building through training courses and on-the-job training are important elements that are implemented – including training of Sudanese technicians in the manipulation of a database of catch data and performance of fishing trials in a multi-functional vessel – to obtain the objective. The project was presented at a side event at the UN Oceans Conference in New York in 2017.

MAIN CHALLENGES

Surveys are essential to ensure long-term sustainability of the fisheries, but mechanisms are not in place to ensure that data is integrated at the Federal level into clear strategies and management plans for the Red Sea State fisheries. Moreover, facing challenges from increased fisheries, transport and climate change, developing comprehensive ecosystem-based management plans for the entire coastal areas is needed.

← Trading today's catch at Sigala Fish Market in Port Sudan.
 PHOTO: JAN ERIKSEN/NORAD



Thailand



PROGRAMME FACTS

DEVELOPMENT OF AQUACULTURE AND GOVERNANCE FOR A SUSTAINABLE UTILIZATION OF THAI SEA WATERS AND TOWARDS AN ASSESSMENT-BASED MANAGEMENT OF THE ANDAMAN SEA FISHERY RESOURCES (2013–2017)

Thai partner: Department of Fisheries (DOF)

Norwegian partner: Institute of Marine Research

Disbursed 2017: NOK 0.8 million

Disbursed 2013–2017: NOK 7 million

Thailand has been one of Asia's top exporters of fish and fish products for decades and its fish exports are expected to grow by 25% by 2030 from 2016 levels. Fish production from aquaculture is expected to grow by 35% in the same period.

GOAL FOR THE COOPERATION

The first project was to use modern technology and governance adaptation to ensure a sustainable utilization of Thai sea waters for marine aquaculture. The second project aims to contribute to sustainable management of the marine fishery resources in the Andaman Sea, through the transfer and adaptation of technology and knowledge for the Thai research vessel *Pramong 4*.

MAIN ACHIEVEMENTS

The aquaculture project established and operated a modern cage farm at Laem Hin producing cobia. This project was a success in producing fish, and made Thai managers capable of operating big cage fish farms. Furthermore, the project demonstrated that it is possible to use modern Norwegian-type technology – big cages – in Thai tropical conditions.

There are several spin-offs of the project, and we now see the spread of technology and the introduction of modern marine fish hatcheries in Thailand. The Thai government has also increased its competence and governance mechanism in marine aquaculture. Thailand implemented a new marine fisheries management plan in 2015, which includes measures required to transform what is essentially an open-access fishery into a limited-access fishery. The Department of Fisheries has improved information-sharing with parties in the industry – primarily with research-based assessment advice for marine resources – through management plan workshops and capacity building.

MAIN CHALLENGES

There has not been a rapid introduction of big cage fish farming yet in Thailand. The most important hindrance is the high cost of establishing offshore fish farms. The project found that in-shore big cage fish farming is not feasible due to the endemic disease and pathogen situation in Phuket. Hence, big cages should be used in offshore areas, which have suitable conditions for fish farming. In order to obtain accurate fisheries data for developing sustainable management plans, the project came to the conclusion that the Thai research vessel *Promang 4* should be upgraded or replaced.

←
Fishing and especially fish processing is an important economic activity in Thailand.

PHOTO: JAN ERIKSEN/NORAD



Vietnam



PROGRAMME FACTS
BUILDING ADVANCED RESEARCH, EDUCATION AND EXTENSION CAPACITY FOR RIA-1, PHASE III CAPACITY BUILDING IN MARINE FISH FARMING OF VIETNAM

Vietnamese partners: Ministry of Agriculture and Rural Development, Research Institute of Aquaculture No. 1

Disbursed 2013–2017: NOK 7.5 million

Vietnam has a long coastline and large exclusive economic zone. Fisheries and aquaculture is seen as a key sector for development and has been given a prominent place in the vision for the country's economic growth.

Standards on Good Aquaculture Practice (VietGAP) were developed in collaboration with the Directorate of Fisheries, and the project has provided training videos, TV programmes and a national website on marine fish farming.

Additionally, support is being given to the University of Nha Trang for a regional project in fisheries-, aquaculture- and climate-related aspects (NORHED), vocational training and private sector support to fish feed development.

 **GOAL FOR THE COOPERATION**

The project's goal is to contribute to coastal economies development through sustainable marine fish farming in Vietnam. The objective is to develop the marine fish farming sector through documentation by a pilot-scale farm model, improved information dissemination, resource mobilization and human resource development.

 **MAIN ACHIEVEMENTS**

The project has established a demonstration marine fish farm as a public pilot farm, which has documented the economic feasibility of a large volume farming approach. The project has conducted training courses for trainers, fish farmers, and foreign students on marine fish farming, including training for staff in safety, labour law and diving.

Various research projects were carried out and 9 research papers published, including environment impact studies.

MAIN CHALLENGES

Overall, the capacity of Vietnam's marine fish farming has been significantly strengthened, having proved the economic and technical feasibility of the sustainable development of a large volume of marine fish farming. However, the sector still faces several constraints and challenges: the development plan and management of the sector in absence of science-based standards for e.g. selecting sites, environment carrying capacity, environment impact monitoring, biosecurity procedure, lack of certification of farming, poor linkages between stakeholders along the value chains of marine fish products, and lack of science-based technology ensuring risk reduction and high quality and food safety within large scale production of seed, grow-out, harvest and post-harvest of marine fish farming.

←
Vietnam is the world's fourth largest aquaculture producer.
PHOTO: KEN OPPRANN/NORAD



GLOBAL AND REGIONAL INITIATIVES



The Nansen Programme

The EAF-Nansen Programme (Ecosystem Approach to Fisheries) is a Norwegian-funded programme established in 1975 and has been running for 42 years. The Programme has had different purposes during this period, but has always been responsive to the global development of fisheries, fisheries management and the needs of developing countries in fisheries research and management. The main tool in the Programme is the Norwegian-owned research vessel, Dr. Fridtjof Nansen, operated by the Institute of Marine Research (IMR) in Norway.

FAO has always been a partner of the Programme, but for the last 12 years, FAO has been responsible for implementing the Programme, while IMR has provided scientific services and been responsible for operating the vessel. In the previous phase, 2006–2017, Norway disbursed approximately NOK 530 million to the Programme.

Through the previous phase the following countries participated: Angola, Benin, Cameroon, Cape Verde, Comoros, Republic of the Congo, Ivory Coast, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea Bissau, Kenya, Liberia, Madagascar, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Nigeria, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Tanzania and Togo. The vessel conducted research cruises in these countries, both for regional and national initiatives.

The development objective (or impact) of the Programme from 2006–2017 was to strengthen regional- and country-specific efforts to reduce poverty, and create conditions to assist in the achievement of food security through the development of sustainable fisheries management regimes, specifically through the application of an ecosystem approach to fisheries (EAF).

In their final report from 2017, FAO reports that the outcomes of the Programme were achieved: specifically, a strengthened knowledge base and training. The Programme assisted in the use of cruise reports from the research vessel, and 16 management plans for specific fish stocks were established. The Programme also assisted in the development of *manuals for how legislation securing ecosystem based management can be developed*.

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The third «Dr. Fridtjof Nansen» research vessel was launched by Prime Minister Erna Solberg in Oslo on the 24th of March 2017.

PHOTO: KEN OPPRANN/NORAD

On average, the R/V *Dr. Fridtjof Nansen* carried out research cruises 250 days each year. A number of workshops analysing cruise data and training in use of software developed by the Programme (Nansis) were carried out.

The Programme has actively supported several regional fisheries bodies (RFBs), and assisted cooperating countries in building competence in operating their national research vessels.

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The vessel has been an important platform for researchers and technicians from the same region to work together at sea as well as on land

In cooperation with universities in Africa, the Programme assisted in a training course in ecosystem-based management of fisheries intended for researchers as well as fisheries managers. More than 90 persons have completed the course, including NGO representatives.

A new phase was launched together with the launch of the new research vessel «Dr. Fridtjof Nansen» in March 2017.

Positive aspects reported by FAO:

- > The vessel has been an important platform for researchers and technicians from the same region to work together at sea as well as on land.
- > The Programme has strengthened institutions through training and capacity building, and hundreds of researchers participating in cruises now have important roles within research and management in African countries.
- > The Programme is contributing to south–south and north–south cooperation.
- > The Programme has enabled data on environment and fisheries to be available to local researchers and to the authorities of the countries.
- > The Programme contributes to placing fisheries management higher on the agenda in many cooperating countries.



Small-scale fisheries

Most fisheries in developing countries operate on a small-scale, but are vital to employment and local food security. Small-scale fisheries represent an important but often underestimated source of employment, food security and income in developing countries. It is estimated that about 90% of all people employed in capture fisheries work in the small-scale fisheries sector and that 75% of aquaculture businesses are small-scale. While 19% of fishermen are women, the proportion of women in fish processing and sales activities is estimated at about 50%. FAO has estimated that about 660 million people, almost 10 per cent of the world's population, depend directly and indirectly on the small-scale fisheries sector in terms of employment and income and as consumers of a very important food item.

To support such types of fishing activity, the FAO member countries approved of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) in 2014. From 2013–2017, Norway provided NOK 39.4 million in support of FAO's work negotiating and implementing the guidelines, which in many countries will require policy and legislative revision. The implementation of the SSF guidelines in many developing countries contribute to achieving the Sustainable Development Goals (SDGs).

Since 2014, focus has been on raising awareness around the guidelines and helping countries implement the guidelines. Tanzania is a pilot country for this implementation. Authorities and organizations have been cooperating in a national working group to implement the guidelines: an action plan has been made, which includes resource management, processing, women in processing, and research.

Other countries are also forming national committees, and an advisory group, a knowledge sharing platform and a secretariat for the SSF guidelines will be established. Further, an international support group for the implementation of the guidelines has been established – the vision for the group is to become a global mechanism where COFI members and interested actors support the implementation of the SSF guidelines at all levels. The global mechanism will promote a common vision and method of implementation, which is based on the principles of SSF's guidelines, including participation of small-scale fisheries communities.

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Small-scale fisheries contribute to food security and poverty reduction for many more people than previously thought. The socioeconomic impact of small-scale fisheries is often "hidden" as it is often conducted in the informal sector.

PHOTO: KEN OPPRANN/NORAD



Combating illegal, unreported and unregulated fishing and fisheries-related crime

Illegal, unreported and unregulated fishing (IUU) is especially a problem in countries and regions where fisheries management is weak and systems for monitoring and enforcing regulations are inadequate. For West African fish stocks and fisheries, IUU fishing by other states' fishing fleets is a major problem. The losses incurred by West Africa alone are estimated at USD 1.3 billion annually. The estimated scope of the problem in global terms is uncertain, and accounts for approximately 26 million tons of fish every year. This represents more than 15% of the world's total production of wild fish. This problem deprives developing countries of vast resources and undermines living conditions in coastal communities. From 2013–2017, Norway has provided NOK 114 million in support of countries and regions as well as global initiatives to combat IUU and fisheries-related crime.

Several multilateral organizations are important in the work against IUU fishing and fisheries-related crime.

FAO

Norway supports FAO's implementation of the Port States Measures Agreement (PSMA) to prevent, deter and eliminate illegal, unreported and unregulated fishing, which is an important instrument in the work against IUU fishing, and agreed by all FAOs member countries. Project activities include technical assistance and capacity building.

UNODC

The UN Office against Drugs and Crime (UNODC) is implementing a project called FishNET which is financed by Norway. The goal is to assist developing countries to more efficiently prevent, identify, investigate, prosecute and adjudicate fisheries crime. This is done through strengthening the legal and policy frameworks to address fisheries crime, enhance the criminal justice and law enforcement response to fisheries crime, enhance the capacity of law enforcement to detect and inspect fisheries crime in containers, and raise awareness at all levels to highlight the serious nature of organized fisheries crime.

INTERPOL

Norway is funding INTERPOL's project 'INTERPOL Fisheries Crime Intelligence and Capacity Building Project (FishINTEL phase II)' and INTERPOL is assisting fisheries and police authorities in developing countries to combat fisheries-related crime. The FishINTEL project also includes financing of the participation and activities of developing member countries of the INTERPOL Fisheries Crime Working Group (FCWG). The Norwegian Ministry of Trade, Industry and Fisheries (NFD), through the Norwegian National Advisory Group against Organized IUU-fishing (FFA), provides technical assistance to both INTERPOL and UNODC in accordance with approved plans and budgets.

TMT

In addition, the Norwegian foundation Trygg Mat Tracking (TMT) has been funded in order to assist six West African countries in building their capacity against IUU fishing.

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In order to combat illegal, unreported and unregulated fishing (IUU), Trygg Mat Tracking provides regional training to improve compliance and governance in West Africa's large-scale fisheries sector.

PHOTO: FCWG/TRYGG MAT TRACKING



Consultative Group for International Agricultural Research and World Fish

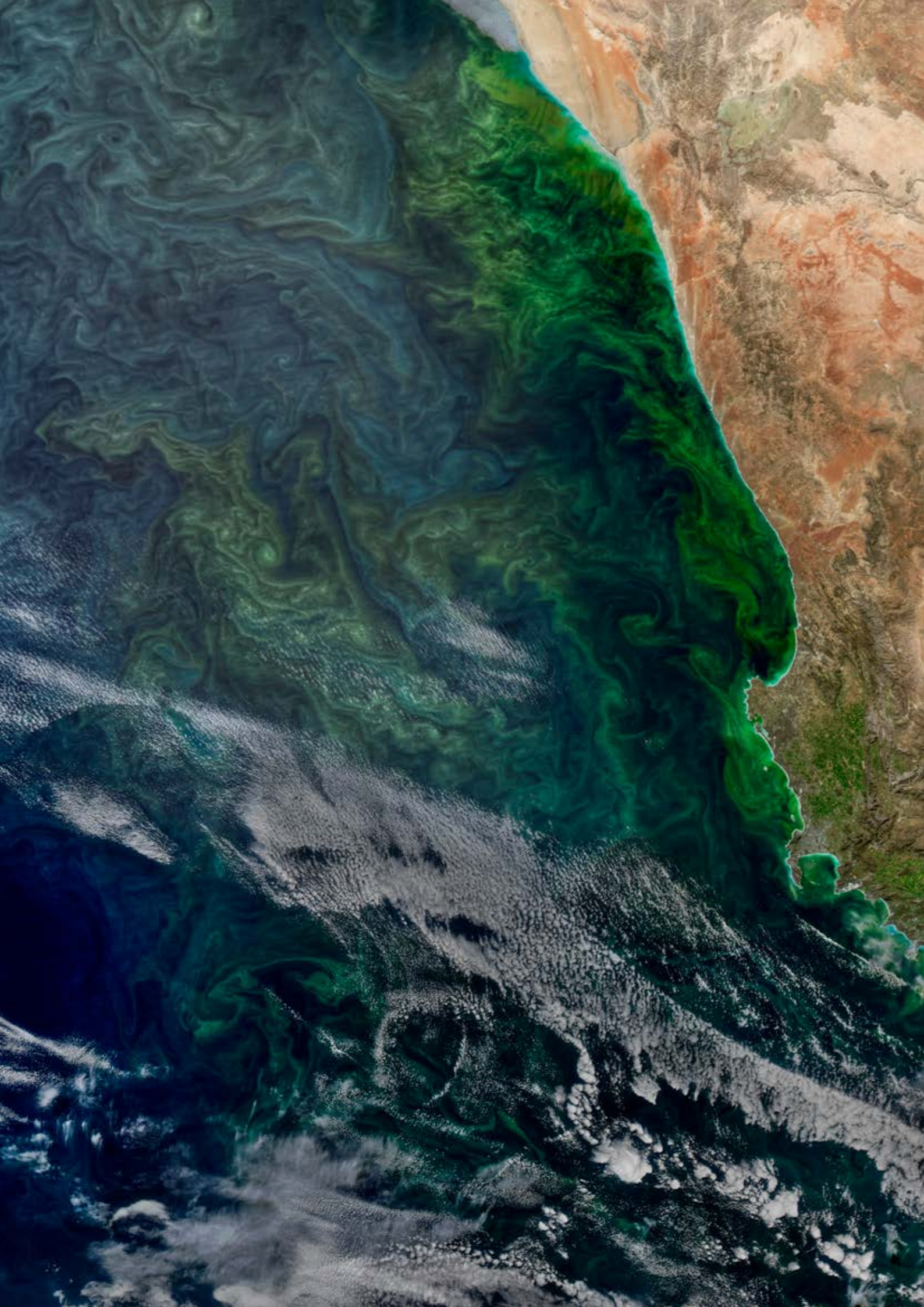
In 2017, Norway decided to give specific support to World Fish within aquaculture. World Fish is one of Consultative Group for International Agricultural Research 's (CGIAR) research centres. World Fish mainly carry out research on two aquaculture species, tilapia and carp, which are the two most important species in aquaculture globally, and are sought by developing countries. Norway will contribute NOK 10 million per year over five years.

Research is focused on countries with low and medium human development indicators and high dependence on fish for food. Also where aquaculture is in early stages of development but needs accelerated growth to fill projected shortfalls, or where aquaculture is already established but opportunities exist to sustainably intensify to reach the supply levels required to meet growing domestic or regional demand.

Research advances in these areas will contribute to sustainable growth, while ensuring that poor farmers, their families and communities access direct nutritional and economic benefits from a sustainably growing aquaculture sector.

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WorldFish works on improving scientific understanding and aquaculture production in developing countries.

PHOTO: ÅSMUND BJORDAL/HAVFORSKNINGSINSTITUTTET



Benguela Current Commission

The Benguela Current Large Marine Ecosystem (BCLME) is a highly productive coastal upwelling and aquatic ecosystem shared between Angola, Namibia and South Africa. To safeguard the health of this important ecosystem and the benefits it provides, the three countries have put in place the Benguela Current Commission (BCC), which later has changed its name to the Benguela Current Convention. The goal is to ensure sustainable development in the BCC region within the context of the ecosystem-based management, focusing on living marine resources, pollution and ecosystem health and biodiversity. Norway has supported this initiative with both research and funding since the 1990s, and from 2013 to 2017 this support amounted to approximately NOK 13 million.

The cooperation has provided results in three areas:

LIVING MARINE RESOURCES

The ecological risk assessment (ERA) was applied to strengthen the fisheries management in the region. The results were used directly to improve management of the shared resources in each member state and is now an integral part of the ecosystem approach to fisheries (EAF) management. The next phase, developing the protocol on joint management and stock-sharing arrangement, is currently being established by the BCC Ecosystem Advisory Committee.

POLLUTION

In addition to the known major 'hotspots' of Luanda, Walvis Bay and Cape Town, new pollution hotspots were identified, five in Angola, three in Namibia and seven in South Africa. Thereafter, monitoring plans were developed, training on pollution monitoring was conducted and scientists from the region acquired technical knowledge on 'hotspots' and pollution monitoring. In addition, recommendations were made regarding the integration of plans into policies to control and monitor water quality standards, control spillage and release of harmful substances.

ECOSYSTEM HEALTH AND BIODIVERSITY

This component considered the impact of fishing on the ecosystem and provided the opportunity to the parties to draft a national plan of action (NPOA) for by-catch and ghost fishing of seabirds and turtles. A review report on current status and threats to seabirds, turtles and other vulnerable marine species in the BCC region was produced. NPOAs for seabirds in Namibia and South Africa were updated. The first NPOA for seabirds in Angola was also produced. These NPOAs included mitigating measures to reduce the pressures on the ecosystem and enhance the understanding of matching predators to prey through selective fishing practices. In addition, a guide for stakeholder groups on valuing and monitoring ecosystem services was produced.

CHALLENGES

In order for this cooperation to have results on the ground, there is a need for fisheries and environment managers and politicians in the three countries to bring the results of the shared research into shared management of the fish resources and ecosystem, agreed to by all countries, and put NPOAs into action.

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The Benguela current during an upwelling event 2 September 2017. The green colour indicates primary production through the growth of phytoplankton.

PHOTO: NASA OCEAN COLOR WEB (2017) OCEAN COLOR IMAGE GALLERY. ACCESSED OCTOBER 27, 2017.

A photograph of a sunset over the ocean. The sun is a large, bright white circle on the horizon, partially obscured by a blue horizontal bar. The sky is a gradient of orange and red. The water is dark blue with small waves. In the lower-left foreground, a small boat with a person on board is visible.

ADDITIONAL EXAMPLES OF RESULTS

Vietnam: An aquaculture and fisheries law

Through its support, Norway has also improved Vietnam's research capacity in genetics, fish health and marine aquaculture.

Vietnam has received a total of NOK 42 million, and the research has enabled poor families to increase their production by up to 40% after participating in an aquaculture trial project with a new type of tilapia fish. Selective breeding resulted in a 46% higher growth rate and greater cold tolerance than with the more common Nile tilapia. Fish farms that began using the method experienced few incidences of fish disease, while most other fish farms experienced many. In 2001, Vietnam's total tilapia production was 15,000 tonnes, and by 2015 this figure had risen to 187,000 tonnes.

In its work assisting Vietnam with preparing and implementing a new fisheries law, Norway has assisted the legislation's ability to secure an environmentally and economically sustainable fisheries industry and provide fishermen and the aquaculture industry with predictable framework conditions. The project was carried out in two phases between 1999 and 2011. In record time, Vietnam managed to prepare its legislation and have it adopted by autumn 2003. The results came in the form of increased revenue and fewer violations of the law. Regulation under the new law has taken the pressure off Vietnam's fish resources by, among other things, increasing investment in aquaculture. In 1996, fishing accounted for 66% of total revenues in the sector, 10 years later, this figure was halved. Between 2005 and 2015, aquaculture production grew by 7.1% annually. The value of aquaculture production in 2015 was 6.9 times greater than in 2001.

Furthermore, the new fisheries law introduced regulations to protect vulnerable species, and 15 new protected areas have been established along the coastline. Management plans, licensing and supervision have created a better and more predictable management regime.

Aquaculture licences have been allocated to the population of Thang Loi in the Halong Bay area. The licences make it possible to obtain credit and loans, and have helped stimulate economic activity. A survey conducted by local authorities showed that the number of poor in the municipality was reduced from 48% to 18% between 2007 and 2012. Much has been done to increase knowledge about the new fisheries law in order to raise awareness and change harmful practices. A survey of selected fisherman 4 years after introduction of the law showed that violations had fallen by 50% to 70%. The biggest changes came in regards to ocean pollution levels.

Competence building in Vietnamese public administration has resulted in more active Vietnamese participation in regional fisheries cooperation and in international forums such as the FAO Committee on Fisheries and the UN Convention on the Law of the Sea. This has given Vietnam the opportunity to promote its own interests and influence international policies.

Interpol's efforts to combat fisheries crime

Norway's partner in this cooperation is the Norwegian national advisory group against organized IUU fishing (Fiskeriforvaltningens Analysenettverk), whose secretariat is in the Ministry of Trade, Industry and Fisheries. The support has already produced concrete results. With assistance from Interpol, São Tomé and Príncipe carried out an investigation and trial against the owners and senior crew members of Thunder for illegal fishing in the Southern Ocean and polluting the waters off São Tomé and Príncipe in 2015. The senior crew members received jail sentences. Operative case meetings on illegal fishing, headed by Interpol, have encouraged cooperation between industrialized countries and developing countries on a number of criminal fishing cases.

In addition to the Thunder prosecutions in São Tomé, INTERPOL's facilitation of the exchange of intelligence and evidence between developing and developed countries has contributed to the application of over EUR 30 million of sanctions by Spain against multiple Spanish operators and owners of the Antarctic IUU fleet. The Antarctic IUU fleet has been active for over twenty years, and their modus operandi was to hide their identities by abusing the flags, the ports and the customs jurisdictions of developing countries. Their activity, which has netted the Antarctic IUU fleet over USD 600 million, has now been disrupted by the developing countries' cooperation with one other, and proves the global need for a transnational fisheries crime cooperation paradigm, as exemplified by the Norwegian-funded INTERPOL initiative.



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Cover photo: Floating fishing village in
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