

Fish for Development

Policy document

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Fish for Development (FfD) – «Policy document»

According to the instructions from the Royal Norwegian Ministry of Foreign Affairs (MFA) pertaining to the management of the programme “Fish for Development” (FfD), the programme shall “consider all the development projects supported by Norway in the field of fisheries and aquaculture more broadly and expand this area so that Norwegian competence and expertise can be of greater benefit to developing countries”. The programme will extend over a five-year period starting in 2016. One of the aims is to systematically build on experience and increase the effort in this area to achieve results. FfD is a result of the increased political focus on the marine and maritime area and must be considered in the context of Report no. 22 (2016–2017) to the Norwegian Parliament (Storting) (White paper) *The Place of The Oceans in Norway’s Foreign and Development Policy*. The programme shall be actively used in Norway’s development cooperation. 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) underpin FfD.

Norway has provided assistance in fisheries and aquaculture to developing countries for many years. In 2016, this cooperation amounted to about NOK 163 million. Starting in 2017, the annual budget for the Nansen Programme will amount to about NOK 115 million.

The fisheries and aquaculture sector directly promotes food security, employment, export revenues and tax receipts. In order to promote food security and/or nutritional goals and to end poverty, FfD will support partner countries in their efforts to ensure sustainable fisheries and aquaculture and to increase the sustainable production of fish and seafood. FfD has been organized into the following main components:

- Resource management, legislation and the combating of fisheries-related crime
- Research and development, including the EAF Nansen programme
- Private sector development, including aquaculture

Through FfD, the Norwegian government wants to utilize Norway’s comparative advantage to meet the demand from developing countries. The programme should be primarily regarded as a development programme based on Norwegian capacity, competence and practical experience. FfD shall better coordinate existing activities in order to take advantage of synergies, in addition to improving and broadening the cooperation in this area.

2 Background

2.1 Justification

Approximately 70 % of global fish stocks are harvested within biologically sustainable levels, while about 30 % of the fish stocks are overfished (harvested at a biologically unsustainable level). Most of the world's increasing population lives near the coast. In addition to fisheries that are more and more technologically advanced, this puts steadily increasing pressure on fishery resources. Our knowledge of how many fish are 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. In order to achieve sustainable management of fisheries, a mechanism for international cooperation on the conservation and management of fish stocks is necessary. The increasing demand for fish for human consumption can only be met to a limited extent by capture fisheries. Aquaculture will be an increasingly important area for ensuring food security, for economic growth and for increasing incomes as well as export revenues.

Traditional fisheries only exploit a fraction of the marine bio-production. Thus, FfD will also help assist developing countries to increase harvesting from the sea. It is also important to reduce post-harvest losses in the fisheries and to make use of the by-catch and trimmings that currently end up as waste. In addition, there is a great potential for the harvesting of non-traditional resources lower in the marine food chain, such as plankton and mesopelagic fish. Protein and fat from these sources will also be a necessary condition for ensuring raw feed materials for increased production in aquaculture. In addition, there will be a substantial potential for the cultivation of algae and shellfish, which may lead to the development of new industries in developing countries.

Fish have long been the most important export product from developing countries, and the net export value amounted to nearly USD 40 billion in 2013. We do not know how much of that export value accrues to the national treasury of each individual country, but there is reason to assume that this source of income is substantial for the largest fish-exporting countries. The employment effect of the fisheries in developing countries is also significant. According to the UN Food and Agriculture Organization (FAO), more than 56 million people were employed in the fisheries and aquaculture sector in 2014. To that must be added the indirect employment.

Fisheries contribute to global, national and local food supplies. Through the export of fish products, they contribute to foreign exchange revenue, on which some countries may be dependent. From the perspective of food supply and poverty, however, there may be a conflict between exports and national and/or local needs. This issue should be addressed in FfD.

The FAO report, 'Sustainable fisheries and aquaculture for food security and nutrition' (2014), shows that the global catch of wild-caught fish has been about 90 million tonnes in recent years. Of this catch, 40 million tonnes come from poor, small-scale fishers in developing countries. The report emphasizes the important role that small-scale fisheries play for employment, food security, nutrition and poverty reduction. According to the FAO, 660–820 million people are fully or partly dependent on fisheries.

Globally, small-scale fisheries account for 90 per cent of fishery employment and about half of the volume of the total catch. At present, however, millions of people, especially in the small-scale fisheries, live near or below the threshold of extreme poverty, and this reduces their ability to contribute to the food supply above and beyond their own daily subsistence. It is mainly women associated with the small-scale fisheries sector in developing countries who sell the fish to poor consumers. That helps promote increased food security and better nutrition for people in poverty. According to the report, small-scale fisheries have long been overlooked by national governing authorities and international donor organizations. It is difficult to work on poverty reduction and food security in developing countries without taking this context into consideration. It will be important to include the aspect of small-scale fisheries in the organization of FfD.

Nearly half of those who work in the fishery industry and in the value chains associated with the fishery industry are women, most of whom are poor. Women and men usually work in different parts of the value chain. For the most part, men are directly engaged in capture fisheries, and women work mainly in processing, refining and sales. In aquaculture, many women work with fry rearing, small fish ponds and the production of fish feed. It is necessary to increase the awareness and knowledge of women's roles so that they are not marginalized in development projects.

It is a challenge to provide a nutritional diet with a balanced content of nutrients. Seafood is a good source of many important nutrients that are relatively rare in other food products. Fish, especially small fish where both head and bones are eaten, can ensure the consumption of essential fatty acids, high-quality proteins, and important vitamins and minerals, and thereby help prevent malnutrition, developmental disorders and disease. By investing in local knowledge about the exploitation of wild fish resources, Norway can help improve nutrition.

Problems related to nutrition and poverty are not necessarily due to a shortage of marine food resources, but rather to structural conditions (power relationships, gender roles, inefficient organization and management regimes, distribution, inefficient technology, the absence of necessary infrastructure) that limit their availability. Market access is also limited, e.g. because of great distances and insufficient transport possibilities.

2.2 Experiences with and results from Norwegian development cooperation

Norway is one of the world's leading fishing and aquaculture nations. This is the case with regard to education, research, management, technology and business development. There is a demand for Norwegian competence and knowledge in this area. Technical assistance to specific areas through institutional cooperation between Norwegian and foreign government departments has proven to be a useful model. This model has also delegated a clear ownership to partners in developing countries¹. Establishing this ownership with our partners is crucial. A long-term horizon, continuity and flexibility are also important in order to be able to adapt the cooperation to changing framework conditions and personnel in the developing countries. Through institutional cooperation, people who work with

¹ (cf. e.g. Mid Term Review April 2002, Establishment of Vietnam's fisheries law and regulations (Norad/Vietnam SRV 018, June 2002))

similar issues meet each other as equal partners, which helps create a good climate of trust among the institutions involved in the cooperation. Nevertheless, it is crucial that advice be followed up with political decisions and that these be implemented.

Corruption is widespread and has major consequences. It is extremely important that projects are based on good analyses and take into account the ways in which different structural conditions may affect the sector. It is natural to reflect upon who the “main drivers” in the sectors are and why the authorities do not implement necessary changes. This may be controversial and reveal ties between management, policy, taxation, quotas, licences, framework conditions, etc.

Norwegian fisheries development assistance during the period from 1985 to 2006 was evaluated in 2008.² The main conclusion in the evaluation was that Norwegian assistance has played a positive role in supporting fisheries development in partner countries, especially:

- Management of fishery resources has improved in Namibia, Tanzania and Vietnam. Norwegian advisors have helped develop competence and capacity.
- The institutions that have received support have managed to retain key employees and are sustainable. An important reason for this is that Norwegian assistance has been flexible, recipient-oriented and long-term and has helped develop institutions in those countries.
- The support that has been given in connection with the establishment of private companies in developing countries has yielded good results in terms of jobs, to a great extent for women.

The evaluation raises questions about the extent to which the fishery assistance has helped reduce poverty, and it finds that insufficient attention has been paid to the gender aspect in the assistance. The evaluation also called attention to various potentials for improvement. There is an acknowledgement that poverty reduction could have been better addressed in some of the projects. There has been an expectation that a better management of fisheries would benefit the whole country, including the poorest citizens. The focus on distribution of wealth has now increased.

Norway has been a driver for the development and approval of guidelines for small-scale fisheries (SSF) in the FAO in 2014. These should help countries to consider various factors that can help reduce poverty. The human rights aspect pervades the guidelines. SSF should help weak and vulnerable groups to be heard and considered in decision-making processes. There has been an increased international focus on SSF in recent years. Support for SSF is reflected in FfD, e.g. in cooperation with the FAO and civil society.

The research vessel Dr. Fridtjof Nansen assists the EAF Nansen programme in collecting data related to fish stocks and the marine environment. Public administration uses these data in combination with the information they receive from the fisheries. The Nansen programme has helped facilitate the development of 17 management plans for various fisheries. Some of those management plans have been developed in collaboration among several countries. The FAO conducted an independent evaluation of the programme in 2013, which found good results. Particularly good feedback was given

² (Evaluation of Norwegian Development Co-operation in the Fisheries Sector, Evaluation Report 6/2008, Norad).

on the achieved results, capacity building and the development and strengthening of partnerships at the pan-African, sub-regional and national levels. The funding mechanism, reporting from research cruises and consideration of gender equality have improved in the new programme from 2017. The previous system, in which research cruises were co-funded by partner countries, functioned poorly and has therefore been terminated. However, partner countries are becoming more involved in the planning, implementation, analysis and supplementary work in order to improve the use of data in the management. A “gender audit” was conducted and revealed a need for more awareness with regard to participation in courses, education and training, etc. Some of the recommendations have been followed up, but the effort must continue to be given priority.

The Norwegian cooperation with Namibia in the period 1990–2005 included public administration, education and R&D. This cooperation helped develop a good platform for a sustainable fisheries management in Namibia. It is of key importance that improved knowledge about fishery resources and adaptation to modern legislation has provided tools for sustainable management of the resources. Namibia and Norway are two out of six countries that are assessed as having achieved at least a 60% implementation of the FAO’s Code of Conduct for Responsible Fisheries³.

Norway has supported the fisheries and aquaculture sectors in Vietnam in various areas, e.g. public administration, fisheries legislation, research and education. This cooperation has helped generate increased revenues and resulted in fewer violations of the law. Through regulations, the new legislation has helped reduce the pressure on Vietnam’s fishery resources, e.g. by increasing the support for aquaculture. In the period 2005–2015, aquaculture production increased by 7.1% annually. The value of the aquaculture production in 2015 was 6.9 times greater than in 2001. Moreover, the new Fisheries Act has introduced regulations to protect vulnerable species, and 15 protected areas have been established along the Vietnamese coast. Management plans, licences and inspections have resulted in better and more predictable management. In Thang Loi in the Halong Bay area, the local population has been allocated aquaculture licences. These licences facilitate credit and loans and have promoted increased economic activity. A survey conducted by local authorities shows that the number of poor people in the municipality was reduced from 48 per cent to 18 per cent in the period from 2007 to 2012.

In 2015, the Norwegian Agency for Development Cooperation (Norad) provided NOK 500,000 in funding to the Norwegian-owned company, African Golden Tilapia Farm Ltd., for a pilot project for fish farming in Lake Volta in Ghana. After a successful pilot project, the company has increased its activities and currently has 13 employees. The company has specific plans for further growth in 2017, with the aim of investing in the whole chain of production from breeding to distribution in order to ensure long-term sustainability. The company describes the natural conditions in Ghana as being extremely favourable, but states that there are still insufficiencies related to framework conditions, such as access to feed and high-quality fry in addition to inadequate regulations for the whole aquaculture industry in the country.

³ (Code of Conduct for Responsible Fisheries, FAO)

The FfD programme takes the experiences from the Norwegian fishery cooperation and provides a more holistic approach. All fisheries and aquaculture projects are streamlined into one programme. Structures will be established to enable the sharing of experiences between different projects. It must be ensured that new projects fall under the framework of FfD and contribute to achieve the overall goal. The Secretariat will coordinate the programme in order to limit initiatives that are not considered in a comprehensive context. FfD improves the possibility of choosing strategic priorities through the use of limited Norwegian technical resources.

It may be possible to upscale FfD over a period of time. Other major initiatives in addition to the Nansen programme are conceivable. A relevant approach may be to introduce a fisheries inspection programme (separate vessel with Norwegian crew and competence from the Norwegian Coast Guard if possible). There are possibilities of increased and broader programme cooperation with multilateral institutions. For example, this may be with the FAO relating to the implementation of the Port State Measures Agreement (PSMA) in developing countries or with the World Organization for Animal Health (OIE) related to increased efforts to promote fish health. If funds are available, support for physical infrastructure may also be considered. More can be done in areas such as small-scale fisheries, research and management, women's rights, local community development, etc. Over a period of time, other areas that are already included in the programme may also be scaled up further.

3 The programme's goals and contributions to poverty reduction

3.1 Goal hierarchy

In the efforts to fight poverty, it is important to produce more food and to provide work for more people. Capture fisheries can only make a limited contribution to increased food production. However, improved fisheries management will result in a better exploitation of the resources. There are also interesting possibilities for increased harvesting from non-traditional fishery resources, especially at a lower level in the food chain. Distribution of resources is also a relevant issue. Fresh fish are important for food security and local nutrition. In aquaculture, there is a potential for increased production, but this has to be sustainable.

The vision or overall goal for FfD is poverty reduction in the partner countries.

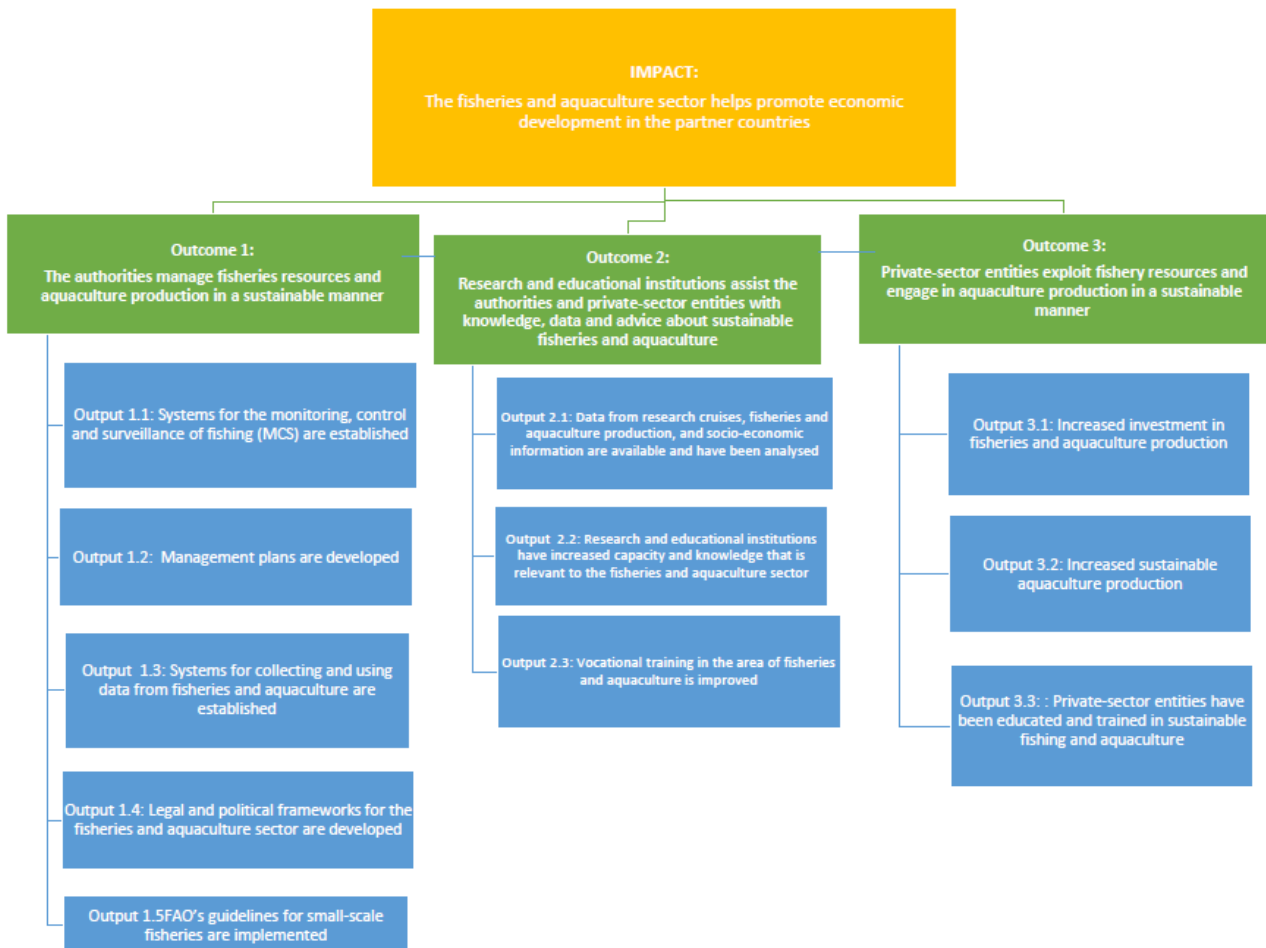


Fig. 1

The development goal is that the fisheries and aquaculture sector should help promote economic development in the partner countries. This entails increased employment for women and men as well as improved food and nutritional security for the population.

Outcomes:

- The authorities manage fishery resources and aquaculture production in a sustainable⁴ manner
- Research and educational institutions assist authorities and private-sector entities with knowledge, data and advice about sustainable fisheries and aquaculture
- The private-sector entities exploit fishery resources and engage in aquaculture production in a sustainable manner

Within each of the outcomes, outputs have been defined. These are at a general level and are linked to important components in FfD, e.g. the Nansen programme. Since the programme has a broad scope, there may be individual projects in FfD that are not directly linked to an output, but they should still contribute to the overall goal. A goal hierarchy and a results framework for the individual projects in the programme must be developed in accordance with the normal project cycle. The various projects differ in their organization and content, but a common denominator for all of them is that they shall contribute to sustainable resource management and optimal resource exploitation.

The FfD programme should contribute to specific measures that shall result in reduced poverty for individual groups. In addition, the programme should also contribute to long-term structural changes (e.g. improved management based on fish stock assessments). In the long run, these changes should yield results that are also useful to the poorest people in keeping with “leave no one behind”. It will be important to follow up and ensure the poverty orientation in cases where efforts are being made to promote structural changes. The goal hierarchy comprises a superstructure and may cover all projects that come under the programme, regardless of who manages them.

According to the plan, FfD shall be evaluated after five years. Therefore, it is important to clarify the basis on which the effects of the programme shall be measured. Table 1 below presents the results framework, which specifies the baseline, goals and means of verification for the various outputs. For some of these outputs, further efforts must be made in order to obtain adequate information about the baseline. Where relevant, these outputs are linked to the results framework in the Nansen programme. The Nansen programme is an essential part of FfD, and therefore evaluations of the two programmes should be coordinated.

⁴ Sustainable development is defined as measures for economic growth where the resource consumption has a goal of meeting human needs and simultaneously conserving the environment, so that this cannot be satisfied only in the present, but also for future generations. In order to generate a sustainable development, the global society must make efforts in three areas: Environmental, Economic and Social conditions (poverty). The Brundtland Commission, 1987

RESULTS FRAMEWORK FISH FOR DEVELOPMENT					
RESULTS	Planned implementation period	Indicators	Baseline	Targets	Means of verification
IMPACT (and target group): The fisheries and aquaculture sector helps promote economic development in the partner countries		Indicators: Per capita consumption of fish, percentage of total protein consumption derived from fish, percentage of export revenue from fish, increased aquaculture production			SOFIA
Outcome 1: The authorities manage fisheries resources and aquaculture production in a sustainable manner		Indicators: 1) Number of fisheries in partner countries with an EAF (Ecosystem Approach to Fisheries) implementation score of over 50%, 2) number of partner countries with a functioning fisheries management cycle 3) number of partner countries that have established regional cooperation concerning the management of shared fishery stocks	1) Will be established on the basis of the Nansen programme's EAF Tracking tool; 2) 0		1) The Nansen programme's EAF tracking tool; 2) Reports from the Nansen programme and bilateral programmes
Output 1.1 Systems for the monitoring, control and surveillance of fisheries (MCS) are established		Indicators: Number of interventions by the authorities against IUU fishing and fisheries-related crime			
Output 1.2 Management plans are developed		Indicators: Number of countries with new or revised management plans			
Output 1.3 Systems for collecting and using data from fisheries and aquaculture are established		Indicators: Number of countries that have systems for collecting and using data from fisheries and aquaculture			
Output 1.4 Legal and political frameworks for the fisheries and aquaculture sector are established		Indicators: Number of fishery and/or aquaculture laws that have been drafted and/or revised in the partner countries			
Output 1.5 FAO's guidelines for small-scale fisheries are implemented		Indicators: Number of partner countries where FAO's guidelines for small-scale fisheries have been implemented			
Outcome 2: R&D and educational institutions assist the authorities and private-sector entities with knowledge, data and advice about sustainable fisheries and aquaculture		Indicators: Number of research institutions in partner countries that provide written scientific advice based on available data and information			
Output 2.1 Data from research expeditions, fisheries, and aquaculture and socio-economic information are available and have been analysed		Indicators: Number of countries that have drafted annual reports regarding resources, the environment and/or ecosystems for management; Number of annual scientific publications from x institutions			
Output 2.2 Research and educational institutions have increased capacity and knowledge that is relevant to the fisheries and aquaculture sector		Indicators: Number of employees with Master's degrees and/or PhDs (broken down by field and gender)			
Output 2.3 Vocational training in the area of fisheries and aquaculture is improved		Indicators: number of students who have completed vocational training in the area of fisheries and aquaculture (broken down by field and gender)			
Outcome 3: Private-sector entities exploit fishery resources and engage in aquaculture production in a sustainable manner		Indicators: Aquaculture's share of the total production of fish for human consumption; increase in aquaculture production relative to outbreaks of disease (ask the Centre for Development Cooperation in Fisheries [CDCF] for input to relevant indicators)			
Output 3.1 Increased investment in fisheries and aquaculture production		Indicators: Number of new investments in the aquaculture industry in the partner countries			
Output 3.2 Increased sustainable aquaculture production		Indicators: Growth in aquaculture production and number of employees in the aquaculture industry in areas where FFD is involved			SOFIA
Output 3.3 Private-sector entities have been given education and training in sustainable fishing and aquaculture		Indicators: Number of employees who have been given education and training in sustainable fishing and aquaculture through FFD			Annual reports from FFD projects

Table 1

3.2 Theory of change (discussed in greater detail in Appendix 1 (Chap. 7))

Many developing countries have considerable potential in fisheries and aquaculture for better nutrition, business development and economic growth, but non-sustainable fisheries, inequitable resource distribution, climate change and pollution are undermining living conditions and food security. Overfishing results in depletion of the fish stocks and changes in the ecosystems. Weak governance, corruption and insufficient competence and capacity in the resource management area stand in the way of improving the situation in many developing countries. There are often insufficient data and a lack of research-based knowledge, which are necessary for sustainable, ecosystem-based management. This also applies to aquaculture, in addition to challenges involving health, the environment, technology and competence. Adapted policy and regulations, suitable institutions and good management practices are crucial in order to ensure the framework conditions that are needed to achieve the necessary changes. There is a need for better framework conditions and more investment in order to ensure increased sustainable aquaculture production.

Fish is food. Among other things, the fisheries sector contributes to food security, employment, export revenue and taxes. In order to help promote food security and the nutritional goal and to eradicate poverty, FfD will support partner countries in their efforts to ensure sustainable fisheries and ecosystems and to increase the sustainable production of fish and seafood through both increased knowledge and better framework conditions. A sound, knowledge-based management is the key to ensuring that we will also be able to eat healthy, nutritious seafood in the future. A knowledge of the size of the fish stocks, where they are located and what environment they inhabit enables us to share the resources to be exploited at a sustainable rate. It is important to monitor and conduct research on the fish stocks and likewise to ensure that the countries have good fishery statistics in order to know how many fish can be caught. In addition, we acquire knowledge about the ecosystem that the fish inhabit and an understanding of the interactions in that ecosystem. Increased knowledge also helps promote a greater awareness about food security in the population.

In order for the fisheries and aquaculture to be able to promote economic development, they must be based on sustainable management by the authorities and sustainable resource exploitation by private-sector entities. Research and educational institutions must furnish both public and private-sector entities with knowledge, data and analyses. FfD should assist local institutions in developing countries with data from research cruises and analyses from fish stock assessments, which in turn will provide the basis for improved management. Support to education and competence building, at both the university, college and vocational school levels, should raise the level in the educational sector, in public administration and in the private sector. There is generally a high correlation between competence building and improved outputs and/or production.

Good, effective legislation 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 quotas, and granting of licenses etc. Illegal, unreported and unregulated (IUU) fishing is a major problem, drains the countries of capital and revenue and thus lowers living conditions. Reduced illegal fishing helps

promote more sustainable fisheries, a better economy for those who are operating legally and improved profitability and food security, because the value chain goes through formal channels. Civil society organizations have a role to play in helping promote openness and transparent processes. FfD should help develop better management plans and legislation, as well as other mechanisms for reducing IUU fishing.

In order to achieve a fair and sustainable distribution of fish stock, close cooperation among countries that exploit the same resources is absolutely necessary, but often difficult to achieve.

Assuming that there is the will and ability to implement political decisions, improved governance, relevant policies and better framework conditions for the sector will facilitate investment, increase production and improve access to local and international markets. This in turn will help promote better food security and job creation.

In FfD's main partner countries, where it is relevant to implement comprehensive fisheries projects, it will be important to conduct a political economy analysis of structural conditions. It may also be relevant to analyse the resource distribution, gender roles and other socio-economic factors. These analyses should discuss the extent to which the necessary conditions for change exist, identify entities, groups and/or local communities with different interests and perform a risk assessment of the consequences if this has not already been done.

FfD is based on an assumption that sustainable management and exploitation of aquatic resources needs structures that include the public and private sectors, civil society and cross-sectoral approaches. For example, the development of fisheries management and the aquaculture industry in Norway was based on a close collaboration among research and/or academia, the private sector and public administration. Our experiences show that when these entities cooperate in a complementary and constructive way, it can help create a win-win situation.

The private sector and private-sector entities contribute to economic growth and employment, which in turn generate taxes and export revenue. Civil society organizations play various roles and operate at various levels. At the global level, NGOs help promote responsible behaviour and normative international efforts, e.g. related to rights, participation in decision-making processes or through participation in technical consultations in the FAO. Furthermore, these organizations play a role as advocates, e.g. to promote a sustainable balance between "use and conservation". With their extensive technical expertise, NGOs are often regarded as important sparring partners for authorities with regard to the design of sustainable regimes for the management of fish resources. These organizations also work to ensure that legislation and guidelines are enforced and that the authorities promote socially responsible investment that contributes to a more equitable distribution of resources through open, transparent processes. At the local level, NGOs can, for example, help strengthen increased production through education and training and value-chain thinking. These organizations can also function as an intermediary between local communities, national institutions and the private sector in order to promote local needs, ensure that rights are safeguarded and simultaneously convey and make available information about the management of fisheries to the respective local communities.

4 Thematic organization of the programme

FfD consists of a number of different elements (research, management, education and training, etc.). Not all areas of expertise are simultaneously relevant in all countries, and many such areas are inherently regional (e.g. the Nansen programme and IUU fishing). In many countries, there are many other donors in the area of fisheries and aquaculture, which may make the Norwegian effort more targeted, flexible and complementary.

FfD must take into consideration the concentration principle in Norwegian development assistance. FfD will operate with a few “main countries”. In these countries, there will be a more comprehensive approach, which covers more and broader areas of cooperation. In keeping with the organization of FfD and with maintaining a dialogue, the inter-ministerial advisory group has recommended countries that were later approved by the Norwegian Ministry of Foreign Affairs. Colombia, Ghana and Myanmar have been chosen as relevant main countries in FfD. This selection was based on political priorities, the potential for development in the fisheries and aquaculture sector, and the authorities’ ability and willingness to work with FfD. Fish stocks migrate across maritime boundaries. It is important to have a regional approach, and regional institutions might be considered in FfD.

However, based on needs, ability and willingness in countries other than the main countries and on areas where Norway has a comparative advantage, cooperation can be established within defined technical modules. This model will serve as an interface between demand in the partner countries and specific Norwegian competence. By offering “packages” based on framework agreements with Norwegian actors, the FfD effort can be more easily scaled up and down as needed. The work is organized in thematic modules, which can be adapted to individual countries and/or regions on the basis of demand and needs. This will also make it possible to initiate limited measures and/or pilot projects relatively quickly in individual countries.

The matrix below, figure 2, exemplifies a possible model of this kind. Norway may provide targeted technical assistance in particular areas in individual countries. In addition, it will assist some main countries (A1 and A2) with a broader and more comprehensive approach.

	Management & regulations			Education & research		Business development and aquaculture	
	Management	Legislation	IUU fishing	R&D/education & training	EAF Nansen	Aquaculture	Civil society
Country A1	X	X	X	X	X	X	
Country A2		X	X	X		X	X
Country B1	X		X	X		X	
Country B2		X	X		X	X	
Country B3			X		X		X
Country B4			X			X	
Region 1	X			X	X		
Region 2	X			X	X		
Etc							

Fig. 2

The sections below give examples of relevant areas of cooperation in FfD. In practice, the relevant cooperation is not limited to these areas.

4.1 Component 1: Fishery management, regulations and combating fisheries-related crime.

Sustainable management of aquatic resources requires good, appropriate regulations in order to safeguard ecosystems and food security based on a country's own priorities and policies. International conventions and agreements set the parameters for national legislation. The fact that the oceans have been given a separate sustainable development goal can also help strengthen the preservation of the seas as an ecosystem. Based, among other things, on experiences from the Norwegian management model, FfD will assist developing countries in developing a sustainable management of their respective fisheries and aquaculture sectors. A lot of Norwegian knowledge is 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 in the following areas:

- Laws and regulations, institutional frameworks
- Development of management plans and harvesting rules (capture fisheries)
- Measures to improve the exploitation pattern (capture fisheries)
- Organization of and arrangements for bilateral fisheries cooperation and cooperation in regional fisheries management organizations (capture fisheries)
- Reporting systems and management of relevant fisheries data
- Administration of allotment and operational phases (aquaculture)
- Development and implementation of risk-based surveillance (aquaculture)
- Monitoring, control and surveillance (MCS)
- Implementation of guidelines for sustainable small-scale fisheries (SSF) in national fisheries legislation

Norway can also assist in management of competing uses of the oceans. These contributions could be in the following areas:

- Laws and regulations, institutional frameworks
- Development of marine area plans, area plans for the aquaculture industry and for offshore oil and gas operations, etc.
- Handling of conflicts between fisheries and other business activities
- Collection, storage and use of marine spatial and marine species data
- Integrated Coastal Zone Management (ICZM), where the use of land areas is planned in connection with nearby marine areas, marine area planning and fishing communities
- Efforts to build organizations' capacity to contribute in the development of laws and regulations
- Contributions to the implementation of guidelines for small-scale fisheries

Norway is recognized for its competence in the efforts to combat fisheries-related crime and for its work with IUU fishing. Additional development cooperation that is complementary to the efforts that Norway is already supporting may be considered, including the following areas of activity:

- Practical assistance with crime analysis, documentation and knowledge-based operational activities
- Development of laws and regulations for the interdisciplinary and cross-border combating of fisheries-related crime
- Development of competence in cross-sectoral and cross-border sanctions
- Development and implementation of interdisciplinary investigation and prosecution plans
- Support to the work of multilateral organizations, including INTERPOL, UNODC, WCO, ILO, FAO and IMO
- Transfer of knowledge concerning compliance, identification, exchange of information, investigation, rogatory letters and criminal prosecution
- Support processes related to the negotiation of international norms and regulations
- Improvement of civil society's ability to influence international norms and to monitor and combat fisheries-related crime.

4.2 Component 2: Research and education

Competence building is a core element of Norwegian assistance. Education and research 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. The programme may include (but is not limited to) the following items:

4.2.1 Research and higher education

Relevant topics include fisheries, oceanography, aquaculture, fish health, genetics and breeding, nutrition and feed, fisheries biology, pollution, the environment, and social development. The following measures may be relevant:

- Establish networks between Norwegian universities and selected universities in developing countries
- Research cooperation related to fisheries and aquaculture, for example with World Fish
- Cooperation with SIU, Norad's Education Section and other organizations in order to find synergy effects in higher education
- Cooperation related to fish health, based on coordinated efforts from several relevant Norwegian institutions, e.g. the Norwegian Veterinary Institute, the Faculty of Veterinary Medicine at the Norwegian University of Life Sciences and others
- Support to higher education, including in the programmes in the main partner countries.

4.2.2 The Nansen programme

For more than 40 years, the Nansen programme has assisted partner countries with data collection and the development of knowledge about fishery resources and the marine environment. One of the objectives for this programme is to use knowledge about the marine ecosystem to improve

management. Long time series relating to the marine environment and resources, which the programme has helped gather, are invaluable for following the development and trends in the marine areas and for understanding the effects of climate variation and change. The new Nansen programme will focus on the following:

Sustainable fishing:

- Knowledge as a basis for sharing fish stocks
- Dynamics, distribution and life cycle of fish stocks
- Biomass and production of unexploited resources (mesopelagic fish, plankton...)
- Distribution and diversity in tropical ecosystems
- Improvement of scientific management advice

Pollution and marine biodiversity:

- Environmental studies in connection with petroleum operations
- Sampling of fish with regard to food security
- Mapping of marine waste and microplastics
- Mapping of habitats

Climate change:

- Effects of climate change on marine ecosystems
- Carbon cycle and ocean acidification
- Characterization of and change in marine ecosystems

Competence building:

- Increased scientific production and competence among researchers in partner countries through participation in the Nansen Science Consortium
- Increased competence in technical academic disciplines through the Nansen technical training network (vocationally oriented course activity in fisheries research and management).
- “On the job training” for researchers from partner countries on board the vessel, Dr. Fridtjof Nansen. This has always been an important component, which will be substantially improved in the new programme.
- The new vessel also has the capacity for onboard training by maritime personnel (captains, deck bosuns, etc.), which can be an important contribution to partner countries to ensure the optimal operation of their own research vessels.

4.2.3 Vocational training

In FfD, efforts can be made to improve the vocational training in fisheries and aquaculture.

The Norwegian government has published Report no. 25 (2013–2014) to the Storting, *Education for Development* (White Paper). A number of follow-up measures to the report have been initiated, e.g. application-based schemes. It may be relevant to evaluate efforts in FfD, which are complementary to and supplement efforts in the education report. Measures in FfD may include:

- Support to fisheries vocational schools in developing countries, preferably with a regional perspective
- Vocational education in aquaculture at the aquaculture technician level – which provides a craft certificate course for aquaculture technicians
- Assess cooperation with institutions in higher education, especially fish processing.

4.3 Component 3: Business development, including aquaculture

One of the goals is to attract more investment and achieve increased production in developing countries. The private sector must provide “competent capital” and knowledge about production, the processing market and exports. The authorities must establish good framework conditions.

The aquaculture industry is facing many challenges. Targeted breeding programmes, the development of suitable feed and vaccines, environmental impact analyses, the identification of suitable species for aquaculture, suitable locations, etc. are measures that have proven to be effective in the Norwegian aquaculture industry. Norway can help provide competence to authorities in developing countries for long-term cooperation and the development of knowledge about framework conditions.

Civil society organizations can also be relevant institutions to help improve production and value chains in connection with both aquaculture and small-scale fisheries. Norad’s schemes for promoting business and industry, which aim to help facilitate investment, must also be considered in the context of FfD, and complementarity must be sought wherever possible. It will be particularly important to ensure a focus on structures that affect the women’s participation.

It may be relevant to support:

- Private sector development based on increased processing
- Private sector development based on harvesting lower in the food chain; e.g. cultivation of kelp
- Shellfish farming – there is a great potential here for aquaculture production that does not require any feed
- Development of existing and new small-scale fisheries (e.g. pot fishing for shrimp, crawfish, lobster, squid and molluscs, also in the deep sea).
- Technology transfer and efforts to improve the infrastructure and value chains, for example to reduce waste
- Development of framework conditions for management, regulations, tenure and financing (must ensure a gender perspective)
- Work with a focus on fish health, including Performance of Veterinary Services (PVS)
- Work with a focus on environmental conditions, water quality, etc.
- Oceanographic modelling for optimal site selection for aquaculture facilities
- Development of effective fish feed – with the aim of promoting local production
- Genetics and breeding of high quality fish for stocking
- Regional demonstration facilities in aquaculture aimed at the craft certificate education of aquaculture technicians
- Efforts to improve civil society’s ability to undertake the role of advocating for sustainable private sector development.

In special cases, it may also be relevant to support funding mechanisms such as microcredit and investment funds.

5 Guidelines

The measures taken must be based on the developing countries' needs. It is important to find the interface between the needs of our partners and the areas where Norway can provide technical assistance. Development cooperation must be very long-term, flexible and take into consideration the countries' capacity. Competence building and capacity building must go hand in hand with support to meet the challenges that these countries are facing.

In certain areas of the sector, it may be important to continue some cooperation with middle-income countries that need to solve their environmental and fish disease problems, especially if this is considered in a regional context. The main focus, however, will be on the poorest countries.

5.1 Criteria for the selection of countries:

Geographical concentration is a determining factor for the FfD guidelines. In some areas, it may be natural to have a regional approach. However, most initiatives will be undertaken through bilateral cooperation. Therefore, it is natural to have guidelines for determining which countries are to be included in the programme. The following criteria have been considered⁵:

- Cooperation shall be demand-driven
- The country shall be classified as an OECD/DAC country. The vision of fighting poverty shall be given weight. The concentration principle shall be followed.
- There should be a substantial fisheries and/or aquaculture industry or the potential for one in the country
- Norwegian experience and expertise shall be relevant
- A need for capacity building and competence building in the fisheries and/or the aquaculture industry must be identified
- The country must commit to implementing programme activities that are intended to improve the management and development of the fisheries and/or aquaculture sector

5.2 Cross-cutting issues and risk analysis

There are four cross-cutting issues in Norwegian development policy that also apply to FfD; cf. the respective grant-scheme rules. The following cross-cutting considerations shall be complied with:

- Corruption/Anti-corruption
- Women's rights and gender equality
- Climate and environment
- Human rights

5.2.1 Corruption/Anticorruption

In natural-resource-based sectors, considerations of good governance play a key role because these sectors are often exposed to corruption, fraud and illegal activities. Good governance includes the ability of government institutions to work effectively and openly as well as the relationship of the

⁵ The Nansen programme has a separate process for the selection of countries.

private sector to social responsibility and a strong civil society that can hold the authorities responsible for decisions made on behalf of the population. There is a great risk of corruption related to both the private and public sectors as well as to the political sphere. It must be considered that the authorities and other key actors might not want to undertake necessary structural changes. It is important to discuss corruption as a risk (to what extent the achievement of goals can be affected by corruption) and to what extent projects can result in more corruption. Political economy analyses may be an important tool here.

5.2.2 Women's rights and gender equality

Women play a key role in the processing and commerce of fish. They are key players in fishery communities which are the backbone of small-scale fishing in most countries. They make repairs on equipment, own boats and provide credit to small-scale fishers. Through the sale of fish in villages and in marketplaces, they affect the consumption of fish and hence nutrition. These factors emphasize that gender equality considerations must be addressed in many ways, at both the project level (specified outputs related to women's rights and gender equality) and the activity level (competence building and capacity building, participation in courses, seminars, etc.). When the cooperation includes business development and value chains, the same considerations are important. Even though there is a high percentage of women in fisheries and the aquaculture industry, they are often marginalized. In connection with modernization, the consequences this may have for employment must be carefully assessed, especially the employment of women. It is important to promote measures that safeguard women's interests both directly as mentioned above and by changing structural systems that discriminate against women.

5.2.3 Climate and environment

These considerations must be addressed in the formulation of measures in the programme. The overall goal of sustainability in all aspects of development assistance is important here. Ecosystem-based fisheries management and knowledge about climate, to which the new phase of the Nansen programme shall contribute, will inherently be an important measure in this way. There are big opportunities for generating business development in the sector while at the same time safeguarding environmental considerations. This applies to the proper handling of by-catch, reduction of waste and wastage, use of trimmings from fish in business areas such as feed production (through silage), biotechnological business interests (e.g. pharmaceutical products), etc. In fishery cooperation, the conservation of mangrove forests and biodiversity considerations related to the use of imported species are examples of specific environmental considerations in the work. Unintended impacts on the environment and climate shall be assessed as cross-cutting issues.

5.2.4 Human rights

Human rights in the fisheries sector come into effect, for example, in fishery legislation and especially in relation to the safeguarding of the rights of fishers who transgress boundaries between countries. The ILO conventions are relevant here. The international guidelines for sustainable small-scale fishing discuss human rights and international laws pertaining to those rights to such an extent that support for the implementation of those guidelines will also have significance for the rights that are mentioned there. Another area is rights related to transparency, e.g. in the granting of licences. In post-conflict

areas, there is often a special focus on the management of and access to natural resources. In connection with peace processes, the private sector is often regarded as providing an opportunity to help promote economic growth and employment. Political economy analyses ought to discuss these aspects, among others. Risk factors and mitigating measures must be assessed.

5.2.5 Risk analysis

A comprehensive risk matrix has been prepared for FfD, which shows a number of key risks in the programme, see Table 2 below. Some key risk factors are:

- Environmental impacts of aquaculture and/or fisheries
- Access to and processing of resources
- Capacity and resources of partners
- Insufficient understanding of context by Norwegian technical experts
- Corruption
- The budgetary situation
- High expectations

In connection with individual projects, assessments of risk factors must be made. This also applies to the probability of risk. Therefore, this risk matrix has a comprehensive focus.

Risk factors	Description, “analysis”	Probability	Approach, follow-up
Environmental impact of aquaculture and/or fisheries	Fisheries and especially aquaculture can have major impacts on the environment. This can be related to medicines, feed, non-indigenous species, discharges, etc.	Must be assessed in connection with sub-project	It will be important to assess the implementation of environmental impact analyses in individual projects. This must be discussed and assessed early in the planning phase.
Access to resources in partner countries; e.g. distribution of licences and quotas	Distribution of resources can generally be a challenge. Many in administrative positions use this as an instrument of power. Unintended prioritization of individual groups can be a challenge.	Must be assessed in connection with sub-project	It is important to help promote an open discussion and process regarding criteria and transparency by asking critical questions and perhaps specifying requirements at an early phase. Assess in political-economy analysis.
Limited capacity and resources with foreign and Norwegian partners	Norwegian institutions have a need for predictability when it comes to allocating resources and capacity to development cooperation. Needs may arise that are difficult to meet in the short term. In developing countries, there are many weak institutions with limited resources.	Medium.	Better planning and common understanding among all parties of the necessity of long-term horizons and predictability. This issue must be raised in connection with the establishment of the Knowledge Bank.
Complications related to procurement vs. grants	The programme has many participants. In some cases, it may be a challenge to distinguish between procurement and grants, and likewise when the framework agreements can be used and when a task should be submitted for tendering. These are time-consuming processes, especially when “new” thinking is involved.	Medium	Close dialogue with units that work with these issues, especially the Legal Section (JUR) and the procurement team. This should also be discussed in connection with the Knowledge Bank.

Insufficient understanding of context by Norwegian technical experts	Norwegian technical experts do not always have sufficient knowledge about the country in which they are going to work or about Norwegian aid policy in general.	Medium/Low	Knowledge about a country must be developed over a period of time, and it is important that there is continuity among those who are involved in a project. The Norwegian partners should be given access to relevant courses about Norwegian aid policy and results management.
Corruption	In addition to licences and quotas, corruption can, for example, be linked to other permits and authorizations. Due to personal gain, some actors might be against structural changes. Access to development assistance funds can in itself lead to corruption.	Must be assessed in connection with sub-project	Implementation of political-economy analyses in key FfD countries, and challenging the participants on this basis will be important. Assess separate measures.
Introduction of new technology and modernization	This may have impacts on employment, while also entailing opportunities for increased economic growth and export revenue. Can also be used for better control and follow-up.	Must be assessed in connection with sub-project	Thorough assessments and analyses with regard to socio-economic effects of various components in a project
Export of fish	Can be at the expense of food for the local population. This must be considered in a broader context. In order to reduce poverty, it is necessary, for example, to concentrate on industrialization, job creation in formal sectors and increased purchasing power for the local population.	Must be assessed in connection with sub-project	Thorough assessments and analyses with regard to socio-economic effects, including gender-related consequences, of various components in a project. Focus on taxes and capital flight.
The budgetary situation	The Nansen programme constitutes a very large share of the programme, and hence the budget. In a way, this amounts to “fixed costs” that are tied up. In the event of possible budget cuts, this can become a risk to the funding of the activities in the Nansen programme and those in other projects.	Low, but this may change	Thorough discussions with MFA in order to ensure necessary budgetary allocations and prioritization
High expectations	If the promotion of FfD gives rise to unrealistic expectations for which there are neither the capacity nor resources to follow up, this may become a risk to the programme’s reputation	Medium	Thorough discussions with MFA and Norad’s management in order to ensure necessary resources, capacity and priorities

Table 2

6 Organization

6.1 Management structure

The FfD Secretariat is located at Norad. An inter-ministerial advisory group has been established, composed of the Ministry of Trade, Industry and Fisheries (MoTIF) and the Ministry of Foreign Affairs (MFA). This group shall give advice to the programme at the strategic level and MFA

determines the strategic decision concerning FfD. See figure 3. MFA has established the frameworks and guidelines for FfD.

The Secretariat at Norad shall give technical advice and manage some of the projects. It shall coordinate Norwegian fisheries development assistance and fulfil the Secretariat's functions for the inter-ministerial group. Management responsibility and budget allocation authority for the projects will in principle be maintained. Bilateral projects funded through the regional allocation will be managed by the embassies. Over a period of time and depending on resources and capacity, other management models may be assessed, where more management may be delegated to Norad. Regional projects can be managed by MFA, an embassy or Norad.

FfD is based on interest from a country; i.e. a request from the country via the Norwegian embassy, together with a concept note concerning status, challenges and the need for cooperation. On this basis, Norad in cooperation with a Norwegian technical partner may undertake needs mapping based on assessments of fisheries and technical assistance in the relevant country. Identification of risks and political economy analyses will be a part of this work. Based on the mapping and analytical process and discussions in the inter-ministerial group, a decision is made regarding a planning process. If it becomes relevant to implement a project in the country, the initial idea will be that the partner country is responsible for the preparation of the planning documentation, usually with the assistance of Norwegian actors.

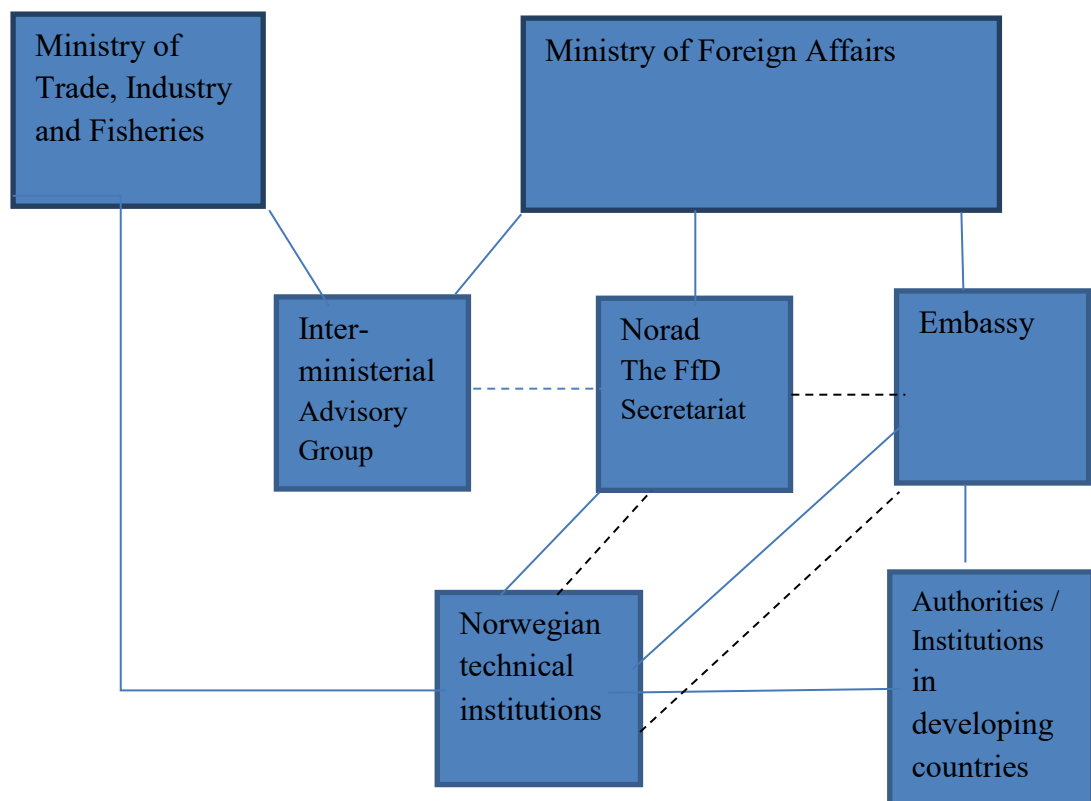


Figure 3 shows FfD's organizational structure.

6.1.1 The Ministry of Foreign Affairs' responsibility

The Ministry of Foreign Affairs is responsible for the comprehensive foreign and development policy in Norway and abroad. MFA has the formal responsibility for the FfD programme and manages the Inter-ministerial Advisory Group. High level and strategic decisions are made by the ministry. Various technical departments are brought in for the assessment of applications for cooperation in the follow-up of the programme.

6.1.2 The Ministry of Trade, Industry and Fisheries' responsibility

MOTIF shall actively participate in the Inter-ministerial Advisory Group providing technical advice and inputs to the programme. The Institute of Marine Research and the Directorate of Fisheries, which are underlying government departments subordinate to MOTIF, are key collaborative partners in FfD.

6.1.3 Norad's responsibility

Norad is responsible for the Secretariat of FfD. The FfD Secretariat shall provide technical input regarding strategy and organization, quality assurance and comprehensive coordination of FfD and also provide technical advice to the embassies during the preparation and follow-up of the programme. Decision-making and management of the Nansen programme and of individual fisheries- and aquaculture-related projects funded through budget item 165.71, Technical cooperation, are delegated to Norad.

6.1.4 The embassies' responsibility

The embassies have the primary responsibility for the ongoing follow-up and the management of agreements in the partner countries. Diplomatic stations provide an understanding of context and are in contact with national and international actors that are engaged in the local geographical area. The embassies cooperate with and report to the FfD Secretariat. In addition, the embassies help facilitate a dialogue between institutions in Norway and in the partner country. The embassies assist with practical arrangements in connection with visits from Norway.

6.2 Cooperation with Norwegian technical actors

The trends in development assistance indicate that technical assistance and the transfer of technology and competence are becoming more and more important compared to capital investment. The aim of FfD is to ensure that Norwegian competence and experience shall play a key role in the programme in order to assist development in developing countries. The University of Tromsø has conducted a survey, commissioned by Norad, of the Norwegian knowledge base and of relevant Norwegian institutions in the individual technical areas.

Norad is and will to an increasing extent be dependent on effective cooperation with external Norwegian knowledge communities. Norad currently manages a framework agreement for consulting services with the Centre for Development Cooperation in Fisheries (CDFC) at the Institute of Marine Research, which enters in turn into agreements with the Directorate of Fisheries, the Norwegian Food Safety Authority, and the Norwegian Veterinary Institute. Norad also has a framework agreement with the University of Tromsø, the Norwegian Environment Agency and the Norwegian University of Life

Sciences. Based on the knowledge mapping, the need for other agreements can be assessed, for both consulting services to Norad and project cooperation. Several private-sector entities have relevant specialist expertise in the technical field. New forms of institutions erase the traditional distinction between public and private-sector entities, which presents challenges related to procurement and tendering processes.

Norad shall take care of collective agreements and access to organizations with technical expertise that address the needs of both actors in developing countries and Norad itself.

6.3 Internal cooperation in Norad

Norad has policy instruments directly aimed at the private sector, so it is a natural collaborative partner for FfD. Private sector schemes should be considered in context with FfD. It is apparent that FfD provides complementary support to framework conditions for private sector development in developing countries.

It is important that there be good contact between FfD and units in Norad that are responsible for areas such as research, taxation, anti-corruption, capital flow, governance, human rights, gender equality and development cooperation with fragile states. The Secretariat has drawn up a communication plan in collaboration with the Norad's Communication Unit (KOMM).

Civil society organizations can help with efforts at the local level: job creation, resource consumption, increased production, "co-management" (include small-scale fishers in the management at the local level), microcredit, women, market orientation, etc. which help promote value chain thinking. At the same time, civil society organizations may have a role to play in accountability and lobbying efforts. Among other things, this concerns a focus on normative and rights-promoting work and on specifying requirements for openness and transparent processes that help promote a fairer distribution of resources. Cooperation with Norad's Civil Society Department is important in order to ensure that the support to civil society complements the other efforts in the programme. A separate process with support to civil society projects is under consideration, initially by invitation. It is relevant that part of the budgetary framework for technical cooperation (item 165.71) is earmarked for NGOs and managed by the Civil Society Department in cooperation with FfD.

6.4 Other cooperation

Multilateral institutions such as the FAO and other UN organizations (e.g. UNODC), the World Bank and the regional banks are important collaborative partners. A close dialogue is also important in order to avoid overlapping commitments. FfD is a comprehensive programme for all Norwegian fisheries assistance. It ought to be ensured that the support that MFA gives to the FAO, the Global Environment Facility (GEF), the Green Climate Fund (GCF) and other multilateral institutions is in accord with FfD and that FfD is utilized in technical assessments. FfD can also include facilitation of the FAO's normative efforts.

Normative guidelines in the marine area include the United Nations Convention on Law of the Sea (UNCLOS), the UN Convention on the High Seas, the Voluntary Guidelines on Flag State Performance, the Port State Measures Agreement to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA), the Convention on Biological Diversity (CBD), and the FAO's Code of Conduct for Responsible Fisheries (CCRF) with underlying international action plans in different areas, international guidelines on the right to food, Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF guidelines) and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security respectively. Such frameworks specify requirements for individual countries' auditing and implementation of legislation and changes in policy and can be included in FfD.

7 APPENDIX 1: Goal hierarchy and theory of change

Cf. the enclosed goal hierarchy.

The vision or overall goal for FfD is reduced poverty in the partner countries.

The development goal is that the fisheries and aquaculture sector will contribute to economic development in the partner countries. This entails increased employment for women and men and better food and nutritional security for the population.

The expected effect is a long-term goal that justifies the FfD investments.

Relevant indicators at the programme level can be used to measure results after a 5-year period. These indicators shall give an indication of an improved economy and an increase in the standard of living. The FAO's State of the World Fisheries and Agriculture (SOFIA) statistics are relevant.

In order to achieve outcomes, a number of outputs must be in place, e.g. R&D institutions provide good knowledge, dependable data, management and increased aquaculture production and are transparent and in compliance with the law. The outputs will be grouped in accordance with the three components of the programme. In order to achieve results, each project must develop outputs based on relevant indicators in addition to analyses of necessary conditions and/or assumptions and risk. In Figure 1, examples of outputs have been presented below the stippled line. These are proposals that can be use in individual projects.

7.1 Theory of change

In a globalized world, there are steadily increasing demands that countries must focus on research and education in order to be competitive and to exploit their resources in a way that ensures that economic growth benefits the population in general. Knowledge and competence must be developed. FfD shall help ensure that this knowledge and competence are utilized by politicians, public administration, the private sector and civil society. Industry and business will play a leading role in helping to promote economic development, but are dependent on a resource base, framework conditions, the market and the possibility to export. To enable FfD to make constructive contributions, it is crucial to have good context analyses that show how various entities act.

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. The politics in a country lies beyond the scope of FfD, but revealing what the countries lose through weak resource management, IUU fishing and fisheries-related crime can help create an awareness among the policy-makers that may result in a willingness to manage the marine resources sustainably and economically.

7.1.1 Component 1: Fisheries management, regulations and combating fisheries-related crime.

Goal: The authorities manage fishery resources and aquaculture production in a sustainable manner.

In order to achieve a sustainable exploitation of resources, it is necessary that all actors involved in the fisheries and aquaculture industries help manage the resources in a responsible manner that will give future generations sufficiently good, healthy fish and seafood. This entails that quotas be set and provisions specified for the size of the allowable catch and the equipment that may be used, and that these decisions be implemented.

Based on experiences from the Norwegian management model, FfD will assist developing countries. The various projects differ in their organization and content, but a common denominator is that they shall help promote sustainable management. FfD is based on an assumption that sustainable management and exploitation of marine and water resources need structures that include the private sector, civil society and the public sector as well as a cross-sectoral approach. This is a complex approach where the various actors are subject to common policies and regulations. R&D institutions furnish knowledge and data; the private and public sectors are in dialogue and coordinate in order to ensure predictability and framework conditions, while civil society can assist with local private sector development and play the role of an advocate for transparency, etc.

Sustainable management is based on the implementation of good laws and regulations. This in turn must be based, for example, on good data and analyses of the resource situation. Better access to data as a basis for resource management is important in order to help achieve socio-economic goals. Sustainable aquaculture requires sound, systematic management in order to be able to increase the production of good, healthy food. This in turn should contribute to increased income and a positive economic development. The economic dimension related to fisheries and aquaculture is important, but also complicated and can be a risk factor. This may be related to licences, quotas, taxes and duties, IUU fishing and capital flight.

Strong legislation, administration and control is the basis of a well-functioning resource management. In poor countries, there is a great need for laws that regulate the fisheries sector and likewise that these laws be enforced. Sound legislation that regulates the fisheries must be combined with inspections and actual possibilities of imposing sanctions. The authorities must ensure that there are good framework conditions for the industry, such as infrastructure, regulations for production, etc. That is also necessary in order to ensure a controlled and legal export of seafood products across national borders.

Illegal, unreported and unregulated (IUU) fishing and fisheries-related crime are major problems. It is estimated that the global value of developing countries' economic losses as a result of IUU fishing and fisheries-related crime is between NOK 90 and 200 billion annually. Reduced illegal fishing helps promote more sustainable fisheries, better economic conditions for those who operate legally, and better profitability and food security because the value chain goes through formal channels. By giving fishery and coastguard inspectors education and training in the enforcement of the laws and by the

sharing among countries of investigative information, criminal activity can be brought to a halt. One model with useful experiences that has been utilized in Norway with interdisciplinary cooperation spanning different institutions and academic fields. The Norwegian advisory group against organized fisheries crime and IUU Fishing (FFA) is relevant for development cooperation. If the fisheries are to be sustainable and help reduce poverty, the sector must be managed in such a way that the exploitation is within sustainable limits, which requires putting an end to illegal fishing.

We are attempting to arrive at a good understanding based on the relationship between the fisheries industry and the government administration and decision-makers. The political ability and willingness of the countries to implement the management plans in a proper way is a necessary condition, and it must also be ensured that the aquaculture industry will be sustainably developed. Risk factors must be addressed. There may be conflicts between small-scale fishers and other industries (tourism), between small-scale and large-scale fishing and among various sectors, such as petroleum, fishing and the environment. It is important that the authorities help promote transparency about the premises for their decisions and help facilitate a dialogue with the private sector and civil society. Norway has experience with the development of integrated management plans that take all users of the sea and coast into consideration, and this can be useful for many developing countries.

Through the Nansen programme, FfD shall help facilitate a systematic gathering and analysis of data. This data in turn will be the basis for new and revised management plans. Through consulting, FfD shall help facilitate more participatory processes associated with policy and legal frameworks, which in turn shall help promote better legislation and thereby better management. FfD assists projects that give the authorities in developing countries access to more and better information about IUU fishing and likewise mechanisms and systems to improve follow-up and implementation. Calling attention to economic losses should help facilitate better management and promote greater efforts that are advantageous to economic development.

It may be relevant to add or modify other activities, either to achieve broader and more sustainable results or to reduce risk. It may be worth considering whether to adjust the focus in FfD over a period of time; e.g. with a greater focus on the environment and climate change.

7.1.2 Component 2 Research and education

Goal: Research and educational institutions will assist the authorities and private-sector entities with knowledge, data and advice about sustainable fisheries and aquaculture.

Knowledge and competence are crucial in order for a country to be able to exploit its resources in a way that helps promote a broader development of welfare. Research and educational institutions provide relevant knowledge and data to decision-makers, industry and business, and civil society so that these actors in turn may have a dialogue and coordination with the authorities in order to ensure good management and predictability. Knowledge and competence are essential for a positive economic development. Increased funding of research and education in a country is crucial to capacity

development, which is the basis for more competent public and private sector institutions. This applies to both higher education and vocational training.

The development of the aquaculture industry in Norway was based on close cooperation among research, academia, the private sector and public administration. Experience shows that when various actors cooperate in a complementary and constructive manner, it can help bring about a win-win situation for both local communities (jobs and economic growth) and the society as a whole (strong economy, exports). Helping the developing countries to succeed in making better use of vocational and higher education as well as research will be a common factor throughout the whole FfD programme. In aquaculture, better knowledge about fish health, feed, the environment, regulations, operations, infrastructure, markets, etc. will help facilitate increased production and sales, which in turn provide food, jobs, income and tax revenue.

Many countries do not have a basic knowledge of modern sustainable aquaculture and fishery operations. Updated knowledge about data, methods and framework conditions for catching and farming fish is necessary both to ensure a better and more sustainable management and to increase aquaculture production. This will help safeguard access to food from the sea and fresh water and increase income and employment from fisheries and aquaculture in the future. Civil society organizations have a role to play in advocating for and helping promote openness and transparent processes.

For more than 40 years, the Nansen programme has had a marine research vessel 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 will be 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.

The process from research to management has multiple stages. First, sufficient data must be gathered. After that, there must be enough technical competence to perform calculations on the size of the fish stocks based on the data collected. The next step is to transform these calculations into technical advice about the sustainable level of harvesting for these stocks. In the final stage, a fisheries management system must be established that is qualified and that not least has a political mandate to put the advice on fishery management into practice with specific regulations on the fishing. The Nansen programme seeks to help promote competence building in all stages of the process. However, the effectiveness of the programme will depend on whether there is sufficient political ability and willingness in the individual countries to implement a sustainable management of fish stocks.

Investment in research, innovation and development is key to business development, job creation, knowledge development and an effective public sector. International cooperation will normally improve the R&D systems as well as the quality and usefulness of the education and training. In order

for knowledge to be able to make these contributions, it is necessary that the various institutions have the ability, willingness and systems to utilize and implement this cooperation. In order to succeed, it must be ensured that the necessary structural conditions are present. A risk assessment must be undertaken, and on the basis of this assessment, it must be considered whether to implement mitigating measures. Competent civil society organizations may be important in order to influence the authorities and private-sector entities involved to make good decisions.

To help ensure that the resources will be of greater benefit to the entire population, it is a necessary condition that the public administration and the political leadership make good decisions with regard to the allocation of quotas and licences. If participants from many countries take part in the same regional research cruise, it will increase the understanding of the management of shared fish stocks.

7.1.3 Component 3: Private sector development, including aquaculture

Goal: The private-sector entities involved exploit the fishery resources and engage in aquaculture in a sustainable manner.

The fisheries and aquaculture industry in many developing countries has a great potential for sustainable development. In a traditional small-scale coastal fishery, there will mainly be opportunities to improve the exploitation of all available raw materials, reduce the waste, gain access to more efficient fishing equipment, harvest unexploited resources and exploit the value chain with regard to markets.

In aquaculture, it will be crucial that the private sector provide capital and competence and have market access in order for them to contribute to increased production. Women are often involved in the breeding of fry and fingerlings and in the production of fish feed, and their participation must be ensured. When the private sector operates within a framework that is socio-economically and commercially profitable as well as environmentally sustainable, this may generate increased investment and production, more jobs and income and better food security.

The authorities can help promote more investment by arranging good framework conditions, including predictability and infrastructure. Civil society can be an important advocate and facilitator of sustainable production, supply chains and market orientation.

Infrastructure for the sale of fish internally in partner countries can be developed. Women fish traders will thereby be able to offer better quality fish that can be offered to customers in the villages. Better access to quality fish can help promote better nutrition.

There is a tremendous growth potential in both marine and freshwater aquaculture to ensure food and employment to 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 necessary to attract more investment in order to increase 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 (regulations, fish health, infrastructure and terms and conditions for export, etc.) in order to be able to exercise good management. 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 also help ensure that the authorities set proper framework conditions.

In many countries, access to capital is a critical factor. Better access to funding schemes such as micro-credit and investment funds will result in more investment and increased aquaculture production. In order to ensure that these schemes are sustainable, it is necessary to ensure proper framework conditions, including legislation, good land-use planning, regulations for fish health, etc.