

**UNITED NATIONS ENVIRONMENT PROGRAMME
(UNEP)**

Terminal Evaluation of the UNEP/GEF Project

**Reduction of Environmental Impact from Tropical Shrimp Trawling
through the Introduction of Bycatch Reduction Technologies and
Change of Management**

Project Number UNEP GF/2731-02-4469 & GF/4030-02-04

FAO EP/GLO/201/GEF

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Executive Summary

1. This report presents the TERMINAL EVALUATION of the Project “Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management”; Project Number UNEP GF/2731-02-4469 & GF/4030-02-04 (FAO EP/GLO/201/GEF), funded by the Global Environment Facility (GEF) through the Implementing Agency United Nations Environment Programme (UNEP) and executed by the Food and Agriculture Organization of the United Nations (FAO). The project had a total planned budget of US\$9,150,000, with a GEF allocation of US\$4,450,000, and an expected co-financing contribution of US\$4,300,000.
2. Participating countries in the project were Cameroon, Colombia, Costa Rica, Cuba, Indonesia, Islamic Republic of Iran, Mexico, Nigeria, Philippines, Trinidad and Tobago, and Venezuela. Bahrain, which is not eligible for GEF-funding, participated in some activities of the project. The Southeast Asian Fisheries Development Center (SEAFDEC), as an autonomous inter-governmental organisation, also participated, with emphasis on Southeast Asia regional level activities. The project was implemented between June 2002 and September 2008 (including a one year no-cost extension).
3. The project design focused on three main or Overall Objectives: “(1) to reduce bycatch taken by shrimp trawlers, (2) to reduce capture of juvenile fish, particularly of species for human consumption, and (3) to increase knowledge on the impact of shrimp trawling on marine habitats”. These objectives are clearly formulated, but also extremely ambitious; they continue to be of major relevance. The Logical Framework Matrix of the Project Document of 2002 contains, aside from the three Overall Objectives, also five Outcomes and four Results, as well as eight Activities (Components), encompassing essential and relevant elements required to effectively address the core problem, the high level of bycatch and discards of fish and non-fish fauna by shrimp trawlers.
4. Direct beneficiaries of the project are the government authorities and the affiliated institutions (fisheries research and management) on the one hand, and the private capture fisheries sector engaged in shrimp trawling on the other. The ultimate beneficiaries of the project are the people dependent on the fisheries resources in the participating countries.
5. The objective of this terminal evaluation was to examine the extent and magnitude of project impacts to date and determine the likelihood of future impacts. The evaluation also assessed project performance and the implementation of planned activities and achievements of planned outputs against actual results. The purpose of the evaluation was to inform Governments, UNEP and FAO and to enable them to take decisions regarding the utilization of project results as well as the design and implementation of future, similar projects, in particular on the future orientation and emphasis of a possible second phase project. The evaluation was conducted during the period December 2008 – March 2009.
6. Some flaws in the original project design affected the evaluation: the project document is not as clear and concise as it could have been, and elements of the project planning matrix are not always linked logically, i.e. activities are not clearly supporting defined results and outcomes. Still more problematic is the fact that at least one Outcome (“Minimizing the pantropical problem of unwanted bycatch from shrimp trawling”) is formulated as far more encompassing than the Overall Objectives. These serious issues have major implications and consequences for the evaluation process as project performance could not always be assessed against the stated intentions of the project document.
7. Tools and procedures for Monitoring and Evaluation have been mainly through the periodic meetings of the governing bodies of the project, and through the use of an independent consultant to assess project performance and impacts through the mid-term review in 2006. It must be noted that the deficiency of the project planning matrix did not support smooth implementation of M&E, and no in-country evidence of an effectively utilized monitoring plan was noted.

8. However, in terms of actual and potential results, the project has clearly made impacts on the policy and strategies of the participating countries. This is reflected through the expression of increased awareness on bycatch and discard issues, the drafting and, in some instances, enactment, of legislation and regulations, and through dedicated management plans for shrimp fisheries in some cases. This also includes countries and regions where bycatch is of considerable economic value (Africa, Southeast Asia). The overall rating of the project is therefore satisfactory (S).

9. By supporting or initiating a wide range of activities, from technical fishing gear experiments to scientific studies, through workshops, meetings and training sessions, the project has produced outstanding results by generating valuable information, increasing knowledge and awareness, building capacities and fostering cooperation concerning bycatch management and reduction of discards. It has also influenced policy making and drafting of legislation by mainstreaming this important environmental and fisheries issue. This constitutes significant progress towards reducing bycatch of emblematic species, e.g. sea turtles, and the reduction of juvenile fish bycatch. The project has clearly made valuable contributions towards attaining its objectives, though at this time largely limited to the experimental fishing areas, and to those shrimp fishing grounds and sub-sectors (i.e. commercial fisheries), where the installation and use of some kind of Bycatch Reduction Devices (BRD) or other gear modifications, e.g. fisheye, square mesh window, second foot rope, have become mandatory as a result of the project.

10. Capacity building was an important focus of the project, and the evaluation found evidence that the project was very successful in building up individual and institutional capacity in the participating countries. The project also enhanced capacities through providing access to equipment and facilities put to good use in fishing gear trials. It made possible the training of fishing gear technologists and fishing industry representatives. Some training also took the form of “Training of Trainers” (ToT), which enabled the training of larger numbers of fishers in the use of BRDs and more responsible fisheries (e.g. in Nigeria). However, the evaluation concludes that continued funding would still be very useful for additional training and other forms of capacity building.

11. There was an early emphasis on technology in project implementation. Other important components of the project such as education (awareness), legislation, and management, did not receive similar emphasis early on although in the course of project implementation they were of course all addressed and covered to various degrees in participating countries. Some outstanding publications and awareness raising materials have been produced by the project, in particular audio-visual materials. Notwithstanding this comment, knowledge documentation and dissemination could have benefitted from additional funding (and added emphasis) for example for producing a synthesis of the awareness raising material prepared by the project, and to support its wider and effective dissemination.

12. Hardly any contribution has been made towards the third objective, regarding the impact of shrimp trawling on marine habitats, as no clear outcomes or supporting activities had been identified in the project design. It is, however, evident that this objective could not be addressed effectively within the given project budget and duration.

13. For two major result areas the project planners clearly underestimated the time and effort requirements for substantial research, development and technical trials to design and test bycatch reduction devices, measures or practices, to analyze results and prepare recommendations, and to support their adoption by the shrimp trawling fishery. Nevertheless, there are examples of recommendations issued in some countries for certain types of BRDs (e.g. grids, JTEDs), and for notable segments of some national fisheries (e.g. in Cuba, Indonesia, Iran, Mexico) BRDs have become mandatory. The participatory approach, enabling successful involvement of the private sector and other stakeholders in the conduct of fishing gear trials and drafting of new regulations, is another outstanding feature of the project.

14. Areas such as enactment of relevant regulations and legislation for improved management are usually beyond the responsibility of fishing gear technologists - the immediate government stakeholders of this project - and again the time requirement for drafting and passing legislation was grossly underestimated. In spite of this, notable progress has been observed in most participating countries, concerning some sub-sectors of the trawl fisheries, primarily the commercial fisheries, with regulations put in place on making BRD installation mandatory, limiting fishing effort, or prescribing closed seasons.

15. Cooperation among participating countries and international organisations was achieved at the level of regional cooperation, with some countries (e.g. Nigeria, Mexico) providing technical assistance to others within their region (or SEAFDEC, in the case of the Southeast Asian region), through regional workshops, and through dissemination of information generated (e.g. publications). At a global level, the move to combine major project meetings or workshops with the symposia of fishing gear technologists under the ICES-FAO Working Group on Fish Technology and Fish Behaviour (WGFTFB) is a valuable arrangement to sustain project results and maintain exchange among participants.

16. There are some very positive examples of NGO and university participation, notably in Mexico (with WWF) and Indonesia, Venezuela, and Trinidad & Tobago (with universities and technical colleges). However, cooperation among governments and more so among stakeholders and sectors needs to be further strengthened and enhanced; additional stakeholders, in particular in the academe or NGO sector, e.g. for areas of research and policy development which so far have received less or little attention, the socio-cultural and socio-economic topics, need to become more actively involved.

17. FAO as Executing Agency has effectively fostered cooperation, and also provided technical backstopping, as well as project operation and coordination. The absence of workable disbursement mechanisms to reach project implementers delayed the project start-up in several countries, or compelled implementers to utilize Government co-financing before project funds became available. Some countries expressed the need for more and better access to technical expertise, either through longer or more frequent training visits, particular in the early phase of the project. This could have been considered in project design.

18. The role of UNEP as Implementing Agency, beyond the obvious link to the fund source GEF and assisting in monitoring and evaluation, was not clear to most responding countries. This could have been clarified better or been enhanced. As the project is of direct relevance to major UNEP Operational Programmes, UNEP could have taken a more active role in networking this project with other related UNEP-funded or implemented activities concerning aquatic resources, marine habitat conservation and biodiversity (e.g. Regional Seas Programme).

19. The sustainability of the project results for the immediate future will largely depend on funding made available from participating governments, funding agencies and/or donors, as well as voluntary contributions, more in actions than in funds, from the private sector. In some countries, where new regulations have been drafted and are still pending in the legislative process, commitment to enact these is required, but also additional resources to enforce or generate compliance. Bycatch reduction related activities are still on-going in countries, using national funding, which also attest to successful country ownership of project activities and results and project sustainability.

20. Strong country ownership and support is expressed in the interest and willingness of Governments to participate in a potential second phase project on bycatch reduction. BRDs have already become mandatory and are routinely used by certain segments of the shrimp trawling industry, but there is still a need to support the drafting, enactment and enforcement of respective legislation in the countries. There is also a need for more or repeated fishing trials to identify and optimize bycatch reduction devices where conclusive results are not yet available, e.g. with regard to different fishing

grounds and seasons, or for the artisanal fishing sector in countries, as so far the focus has been on commercial fisheries.

21. It is acknowledged that the full environmental impact for the ultimate beneficiaries, the resource users and coastal people, cannot yet be assessed and that future impact assessment will have to consist of a combination of biological, environmental stress reduction, and economic monitoring, e.g. of the income level of small scale fisheries benefiting from bycatch reduction.

22. It is strongly recommended to consider a second phase of the project “Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management” based on the progress made and results produced in the project, on the strong political and community will, and on the recommendation of the 4th International Project Steering Committee (IPSC) Meeting in 2007 in Lagos, Nigeria, as well as the Faeroes Meeting (ICES-FAO WGFTFB) in 2008. It is also recommended to proceed as quickly as possible so that enthusiasm and capacity are not lost. This second phase should consider a more holistic approach combining the gear technology aspects more effectively with management (through implementation of legislation and other forms of regulation), economic and socio-economic considerations, and knowledge management for enhanced dissemination of results and greater awareness. The latter issues are in particular needed to increasingly focus on the concerns of the artisanal sector in the second phase project.

1 Overview

23. This report presents the TERMINAL EVALUATION of the Project “Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management” (Project Number UNEP GF/2731-02-4469 & GF/4030-02-04 (FAO EP/GLO/201/GEF), funded by the Global Environment Facility (GEF) through the Implementing Agency United Nations Environment Programme (UNEP) and executed by the Food and Agriculture Organization of the United Nations (FAO). The project had a total budget of US\$9,150,000, with a GEF allocation of US\$4,450,000, and an expected co-financing contribution of US\$4,300,000.

24. Participating countries in the project were Cameroon, Colombia, Costa Rica, Cuba, Indonesia, Islamic Republic of Iran, Mexico, Nigeria, Philippines, Trinidad and Tobago, and Venezuela. Bahrain, which is not eligible for GEF-funding, participated in some activities of the project. The Southeast Asian Fisheries Development Center (SEAFDEC), as an autonomous inter-governmental organisation, also participated, with emphasis on Southeast Asia regional level activities. The project was implemented between June 2002 and September 2008 (including a one year no-cost extension).

25. On the basis of a wide range of activities, from technical fishing gear experiments to scientific (biological and economic) studies, through workshops, meetings and training sessions, the project has produced outstanding results by generating valuable information, increasing knowledge and awareness, building capacities and fostering cooperation concerning bycatch reduction. It has also influenced policy making and the drafting of legislation by mainstreaming this important environmental and fisheries issue. The project has resulted in concrete recommendations for the design of several bycatch reduction devices (BRDs), has caused the adoption and actual mandatory use of these in some fisheries of participating countries and has led to further shrimp fisheries management measures contributing to bycatch reduction. This constitutes significant progress towards reducing bycatch of emblematic species (i.e. sea turtles) and the solid foundation for tackling the reduction of juvenile fish bycatch.

2 Introduction

Background

26. The overall objective of the project was to reduce discards of fish captured by shrimp-trawlers, primarily by introducing in a selected number of developing countries technologies that reduce the catch of juvenile food-fish and other bycatch. The participating countries identified the capture of juvenile food-fish and discards as a non-sustainable practice and therefore assigned priority to reducing the problem nationally. The countries contributed through research and management in the fields of marine biology and fishing-gear technology.

27. The project was designed to firstly carry out a demonstration activity in at least one developing country in each GEF development region. The objective of this strategy was to consolidate effort in the initial few countries to generate lessons that could be rapidly transferred to other shrimp-fishing countries in the same region. Active participation in the implementation of selected activities by adjacent countries (not involved in all project activities) would facilitate this process.

28. The project was implemented at three levels: national, in an initial small group of selected countries with a problem with shrimp exploitation that committed themselves to changing their fishery by introducing more environmentally-sound fishing technologies and practices; regional,

where the successful results from project activities in the initial group of individual countries were disseminated and tested in neighbouring countries, together with coordination of action between all the participating countries and the sub-regional institutions concerned; global, at which FAO collected, quality-controlled, collated, analyzed and disseminated widely essential information that could be used in reducing environmental stress from shrimp trawling in all marine waters.

29. The seven countries of the initial group were Costa Rica, Indonesia, Iran, Mexico, Nigeria, Philippines, and Venezuela, These indicated during the preparatory phase that they had a severe problem with bycatch of fish in their shrimp-fisheries and they wished to participate in a global effort to resolve it. They also had already some form of fishery management infrastructure in place, which made them best suited to undertake the initial national components of the main phase. Their shrimp fisheries were of significant magnitude in their respective regions, thus the positive impact on the environment resulting from the planned interventions would be greater than if undertaken in countries with smaller shrimp fisheries. Although not formally a partner in the preparatory phase, Mexico also participated in the main phase. The other participating countries selected were: Cameroon, Colombia, Cuba and Trinidad and Tobago, (plus Bahrain which is not eligible for GEF-funding), which undertook joint activities together with one of the 7 initial partners. These five countries were very active participants in the preparatory phase and they also had important shrimp fisheries, but the magnitude of their catches was generally smaller than in the seven countries of the initial group. A number of inter-governmental institutions collaborated with the project, since their sub-regional mandates covered various aspects of fisheries research, fisheries development, or fisheries management. Similarly, several other national governments (both developing and developed) with significant interest and experience in tropical shrimp-trawling fisheries collaborated with the project. The first of these was Bahrain, which was ready to undertake basic studies and experimental fishing using Bycatch reduction devices (BRDs) on its own account.

30. A range of stakeholders representing different groups, such as fishers (shrimp fishers, coastal fishers and others), researchers (gear technologists, biologists, environmentalists), fishery managers, coastal zone managers, fish traders, fish processors and various NGOs, all had an interest in the issues to be addressed by this main phase project. Continuing the arrangements and the network of key persons and contacts developed during the preparatory phase, all such stakeholders were involved in the design and execution of the various national components of the main phase through their participation in National Steering Committees, or through their collaboration in the implementation by the leading national institutions of local subcontracts awarded by FAO, or any other mechanisms adopted for implementing the project activities.

31. The introduction of new technologies affects the commercial fishers, and since they are usually the people with the best knowledge of any bycatch problems, their cooperation in finding acceptable solutions was given high priority from the outset. The project activities included the testing of technologies already proven efficient in shrimp fisheries elsewhere; and the adaptation of these to local conditions. Fishers have valuable experience of their local situation, and the introduction of new technologies followed a process by which the choice of technology tested in a particular shrimp fishery, had to be decided in consultation with the industry, with the fishers playing a key role in the experimental fishing trials, using commercial vessels. Following the successful outcome of such experimental fishing, several fishers were given the opportunity to continue to use the new gear on a voluntary basis, the incentive being that the new gear is provided free of charge and, in some instances, the fishers might be given temporary access to fish areas that are usually closed to traditional shrimp trawling.

32. Based on the results from this project-supported experimental fishing, the managers of the fisheries, in consultation with the researchers and fishers, then recommended on appropriate management measures, including provision of input for the drafting of a legal framework, necessary in order to institutionalize the more environmentally-friendly shrimp fishing technologies recommended. Generally, in most of the countries involved in this main phase, their capacity in

fishing-gear technology, in fishery management, and to a lesser extent in marine biology (including shrimp biology), was poor. However, some of these developing countries had gained skills in the development and use of bycatch reduction devices, particularly Mexico in the Latin America/Caribbean region, while in the Asia region SEAFDEC had played, and continues to play, an active role in the promotion and introduction of bycatch reduction devices in member countries.

33. Outside the tropical regions, some developed countries, particularly the USA, Australia, Norway and France, had developed skills to find practical solutions, including bycatch reduction technologies, in their shrimp fisheries. Mechanisms whereby the experience in these more advanced resource countries could be tapped to provide technical assistance, and the lessons learned shared with all the countries participating in the main phase, was an important part of the implementation of the regional and global components.

Relevance to UN, UNEP and FAO Programmes

34. In November 1998, during its 53rd Session, the General Assembly of the United Nations urged “States, relevant international organizations, and regional and sub-regional fisheries management organization and arrangements to take action, including through assistance to developing countries, to reduce by-catches, fish discards and post-harvest losses consistent with international law and relevant international instruments, including the Code of Conduct for Responsible Fisheries” (CCRF) (Resolution A/RES/53/33).

35. GEF’s Operational Programme No. 9 “Integrated Land and Water Multiple Focal Area”, states that “the goal is to help groups of countries utilize the full range of technical, economic, financial, regulatory, and institutional measures needed to operationalize the sustainable development strategies for international waters ... (para 9.2)”. Further, this OP lists as an expected outcome “the reduction of stress to the international waters environment in selected parts of all five development regions across the globe through participating countries making changes in their sectoral policies, making critical investments, developing necessary programs and collaborating jointly in implementing water resources protection measures (para 9.10)”. This project was thus fully in conformity with the GEF Operational Strategy and Operational Programmes, in particular with OP No. 9. It was also relevant to OP No. 2 –“Biodiversity in coastal and marine ecosystems”, and specifically to aspects of eco-system management including elements of: targeted research, information-sharing, training, institutional strengthening, demonstrations, and outreach (or ‘extension’). The project is categorized as a Global/Regional/National Demonstration Project (Type D), but also shows strong elements of a Foundational/Capacity Building Project (Type A). This distinction is of relevance for monitoring and evaluation processes and indicators

36. The project was in conformity with the mandate of the FAO Fisheries and Aquaculture Department (FI) whose mission is to facilitate and secure the long-term sustainable development and utilization of the world's fisheries and aquaculture. In this regard, the project activities were consistent the provisions of the Code of Conduct for Responsible Fisheries, which sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity. The project activities are also consistent with specific objectives of the Fisheries Industry and Technology Service (FIIT) of FAO, the service directly responsible for executing this project, namely its programme “Reduction of Discards and Environmental Impact from Fishing”, whose objective is to improve national fishing practices and policy to reduce discards and other negative impacts on the environment.

37. The project activities were consistent with the provisions of the Convention on Biological Diversity, and its Jakarta Mandate and other legal instruments relating to the sustainability of living marine resource, such as the UNEP Regional Seas Programme Conventions and Protocols. They

were also consistent with UNEP's role in the conservation and maintenance of biological diversity. It also has a significant linkage to the Millennium Development Goals (MDG 7), and the World Summit on Sustainable Development (WSSD) Plan of Implementation, supporting a number of its actions and measures.

Executing Arrangements

38. The project was executed by FAO in direct liaison with the governments of the 12 participating countries, collaborating countries and intergovernmental bodies. Within FAO's Fisheries and Aquaculture Department, the project was the responsibility of the FIIT. Each country had a National Steering Committee with the mandate for the coordination of national activities. In order to ensure participation of all stakeholders, the membership of each National Steering Committee included representatives of: government fishery managers, researchers (in fishing gear technology, marine biology, and environment) as well as shrimp-fishers, non-shrimp fishers, shrimp/fish processors and traders, NGOs, etc.

39. The additional collaborating governments and inter-governmental organizations also had a focal point Coordinator for contacts with FAO's Project Coordinator. The technical oversight and substantive support and/or inputs to the project were through an internal Project Task Force, comprising FAO experts. An International Project Steering Committee was established comprising Representatives of the responsible Ministry in one of the participating countries from each region, the Implementing Agency (UNEP), and the Executing Agency (FAO)¹.

40. Other GEF implementing and executing agencies were invited to participate as Observers, plus also, as and when necessary, any other intergovernmental institutions collaborating in the project. The International Steering Committee was charged with reviewing, advising, and approving any significant changes proposed to the original overall work programme and budgets of the project. UNEP was responsible for overall project supervision.

3 Evaluation

Objective, Scope and Key Principles

41. The objective of this terminal evaluation is to examine the extent and magnitude of project impacts to date and determine the likelihood of future impacts. The evaluation also assessed project performance and the implementation of planned activities and achievements of planned outputs against actual results. The purpose of the evaluation is to inform the Government bodies, UNEP and FAO and to enable them to take decisions regarding the utilization of project results as well as the design and implementation of future, similar projects, in particular on the future orientation and emphasis of a possible second phase project. The evaluation was conducted during the period December 2008 – March 2009. The Terms of Reference are provided in Annex 1.

42. The evaluation looked for answers to the following main questions:

1. Did the project countries adopt fishing technologies (including BRDs and others) and practices that are environmentally friendly?

2. Did the project reduce the number of juvenile commercial species, non-target fish and non-fish species caught by shrimp-trawlers?

¹ The Latin America Region was represented by two countries – Mexico and Venezuela – considering the larger number of countries from this region. Other members, aside from FAO, UNEP and SEAFDEC, were Iran, Nigeria, and the Philippines.

3. Did the project increase co-operation among countries at the regional and global levels regarding shrimp fisheries?

4. Did the project improve national capacities for sound management of the shrimp-trawler fisheries?

43. It also posed further key questions, inquiring for the “added value” or “additionality” of the project, prompted by the fact that some participating countries (and SEAFDEC) had carried out related activities already for some years before the project started, in order to distinguish between the basic question “what happened?” and “what would have happened anyway?”, and to gain information also on the issue of “attribution”. Supplemental questions related to the identification of key achievements, and, more importantly, their key supporting or success factors. Sometimes, adequate information on baseline conditions and trends was lacking. In such cases, which are highlighted below, assumptions had to be made to enable the evaluator to make informed judgements about project performance.

Methods and Project Ratings

44. This terminal evaluation was conducted as an in-depth evaluation using a participatory approach. The Evaluator employed a number of methods including structured questionnaires and focus group discussions to involve as many stakeholders as possible. The Evaluator consulted with, and informed the UNEP/DGEF Task Manager, key representatives of the executing agencies (FAO) and other relevant staff throughout the evaluation, and also liaised with the UNEP/EQU, FAO and the UNEP/DGEF Task Manager on logistic and/or methodological issues pertaining to the evaluation.

45. The findings of the evaluation are based on the following:

1. A desk review of project documents including, but not limited to:
 - (a) The project documents, outputs, monitoring reports (such as progress and financial reports to FAO, UNEP and GEF annual Project Implementation Review reports) and relevant correspondence.
 - (b) Project Country Reports
 - (c) Other project-related material produced by the project staff or partners.
 - (d) Relevant material published on web-sites maintained by FAO.
2. Interviews with project management and technical support bodies, including: FAO Project Coordinator, National Project Coordinators, the National and International Steering Committees, the internal Project Task Force.
3. Interviews and Telephone interviews with (intended and actual) users of the project outputs and other stakeholders involved with this project, including in most of the 12 participating countries.
4. Field visits to project staff, and partner and project sites: Rome, Bangkok, Philippines, Iran and Mexico².

46. A list of all persons contacted for this evaluation is appended as Annex 2, the schedule and itinerary of the evaluation in Annex 3. The success of project implementation is rated on a scale from ‘highly unsatisfactory’ to ‘highly satisfactory’. In particular, the evaluation assesses and rates the project with respect to the categories defined in Section 4 below and described in more detail in the Terms of Reference (ToR).

² A planned visit to Nigeria could not be carried out, as the timely issuance of a visa was not possible.

4 Findings on Project Performance and Impact

Highlights and Status of Project Activities and Results

National

47. *Bahrain (GEF non-eligible)*: The country had conducted some experiments with BRDs (TED and square mesh) before the start of the project. No funds were allocated to execute national plans for project activities, other than active participation in project meetings and workshops. For these occasions, information on the national shrimp trawl fisheries was collected, analyzed and shared with other countries during global meetings. There are so far no specific regulations for bycatch reduction, aside from the legislation of an extended closed season. As the earlier experiments had indicated good reduction rates and higher selectivity of the net, a new national plan was drafted and awaits funding.

48. *Cameroon*: The project has enabled the country, with support from Nigeria, to test TED and other BRDs, which were completely unknown before. The resulting information has led to the drafting of a new fishing law, still pending for approval with Parliament, which will make the use of BRD conditional for obtaining a fishing licence. The sector has now become aware of the issue of bycatch reduction and the usefulness of BRDs and is sensitized through the project on resource management issues.

49. The project has further initiated an initiative for the harmonization of fishing regulations, in particular on Monitoring, Control and Surveillance (MCS), in the Southern part of the Gulf of Guinea. Crucial success factors were the project funding, technical support through FAO and by Nigeria, national political will to manage fisheries resources, and the good team spirit of the national project team.

50. *Colombia*: This country had already experimented with TEDs before the project started, but through its implementation systematic experiments could be carried out also with the use of other BRD types (fisheye and changed netting materials) on both Colombian coasts (Pacific and Atlantic). The project further led to wider recognition of the issue of bycatch among stakeholders (fishers and managers) and to a general understanding that fishing technology improvements could serve conservation goals. The use of TED and minimum mesh sizes is already regulated, along with the imposition of closed seasons and areas to protect stocks and resolve conflict, further legislation is drafted for the adoption of BRDs.

51. This awareness raising, together with capacity building (also for fishers) and close cooperation among researchers, fishers and managers is an outstanding feature of the project. Cooperation among countries at the regional (the country received technical support from Mexico) and global level is cited as a success factor, beside the approach linking fishing technology and conservation.

52. *Costa Rica*: Fishing gear trials were conducted using commercial vessels as contribution of the private sector and experimenting the prototype net (Mexican design and technical support), testing square mesh window and fisheye as BRDs. In addition, training activities and workshops were instrumental in capacity building and awareness raising. The project produced substantial information and knowledge regarding the composition and quantification of bycatch, and on the means for its reduction.

53. There is limited voluntary adoption of BRDs (by the trawlers that had participated in trials), signifying starting acceptance by fisher stakeholders of the project developed bycatch

reduction technology. The exchange of information with other participating countries and regional cooperation is considered the key success factor for this achievement.

54. *Cuba*: The need to introduce new fishing technology less harmful to the environment is now accepted by all stakeholders in the fisheries sector. The project enabled the country, in collaboration with Mexico, to design and test a new shrimp trawl with fisheye BRD which combines several advantages (bycatch reduction, saving of material, reduction of fuel consumption, and higher export value of shrimp catch. the use of this new gear type has already been legislated and it will be gradually introduced in 2009 to at least 80% of the fishing fleet.

55. The efficient function of the National Project Steering Committee (NPSC), and the participatory approach allowing all concerned stakeholders in the industry to be involved in the development, implementation and monitoring of project tasks is considered a crucial factor for its success.

56. *Indonesia*: TEDs are used in industrial shrimp trawling already since 1982. Through the support of the project, which also provided international expertise, the country was able to test other BRDs (e.g. fisheye and square mesh window) and to evaluate their performance. Aside from the generation of this technical information and knowledge, there has been a considerable increase in awareness level. This was supported through the production and dissemination of appropriate materials, on the longer-term economical and environmental advantages of improved management of trawling in general and bycatch reduction in particular, also within the top levels of the fishing industry. Recommendations for adoption of BRDs have been made and incorporated in draft legislation.

57. The success of the project was greatly enabled by the appropriate composition and function of the national Steering Committee, and the full and effective support from both the industry and the academic sector (university cooperation).

58. *Islamic Republic of Iran*: Research activities on bycatch reduction started already in 1992, and one BRD type (square mesh window) was legislated and introduced for shrimp trawls, but then only with limited success. During project implementation different types of BRD (e.g. grids, fisheye) were systematically tested and good bycatch reduction rates with tangible benefits to the shrimp trawl industry (i.e. better quality shrimp, fuel savings) were achieved. The grid (Grid 80) became mandatory for industrial trawlers. Consequently, gear trials later focused on the artisanal fisheries, so far with mixed results, and these trials (using JTED, square mesh window, parallel ropes, and fisheye) are continuing. Aside from the legislation of BRD use, shrimp fisheries is also regulated through effort reduction (through buy-back of licences and gear swaps) and controls, research-based imposition of closed seasons and closed areas.

59. Aside from the results on bycatch reduction and improved gear selectivity, other highlights include the increased capacity as a result of technical trainings and the good level of awareness and compliance with management measures. Project support, with technical expertise from SEAFDEC and FAO, enabled the country to carry out experiments with JTEDs and increased national capacity to advance further in the design and testing of BRDs.

60. *Mexico*: BRD testing started here in 1987, involving trawl modifications, new devices and alternative fishing gear. TED is mandatory for all industrial shrimp fishery (certified for export to United States). The project enabled the development and promotion of a new prototype (new knotless material with less water resistance, and incorporating a 2nd footrope and fisheye), the conduct of workshops, training courses, and technical support to and exchange of information with countries of the region. Knowledge and awareness generation was cited as one of the outstanding highlights of the project, with the bycatch issue entering fisheries school curricula, aside from the successful integration of stakeholders.

61. This sector-wide participation is considered an important success factor, but also the fact that the project meets the requirements and needs and is therefore useful and worthwhile for the stakeholders. Information gained through project activities form the basis of a pending revision of the current fisheries law (NOM 002 PESC of 1993), other highlights include a high level of country co-funding, the technical support from FAO and the successful cooperation of fishing gear technologists, including local consultants, academe, NGOs, and private sector. Several thematically linked new projects, in cooperation between Government and NGOs, with focus on conservation of endangered species and socio-economic were started building on the results of this project. Government has started, using national funds for investing in the fishing gear, to promote the project-developed prototype, both for its bycatch reduction and fuel saving effects. Other applied shrimp resource management measures include effort reduction and closed seasons.

62. *Nigeria:* Recertification of the shrimp export to the United States made possible through the adoption of BRDs (TED) in the course of project implementation is the outstanding success for this country. Other major accomplishments include the generation of information and knowledge, resulting from systematic shore-based and on-board fisheries data collection and analysis, testing and adoption of several types of BRD (e.g. square mesh window, 90° turned mesh panel), and the promotion of best practices in fishing. Capacity building used a “Training of Trainers” approach. The awareness generated has extended to other countries in the sub-region, aside from the close cooperation partner Cameroon also to Togo, Benin, Gabon, Sao Tome & Principe, and Equatorial Guinea.

63. The successes are attributed directly to project funding for regular workshops, seminars and lectures, the actual gear tests, and technical support provided by FAO.

64. *Philippines:* The project highlighted the global nature of the bycatch issue and facilitated the collaboration with the regional institution SEAFDEC and Indonesia. In practice, it enabled the country to carry out the necessary fishing trials, in several important shrimp fishing grounds (e.g. Samar Sea, Lingayen Gulf, San Miguel Bay, and Manila Bay), and identify a BRD device (JTED) recommended for adoption and introduction. After a series of wide ranging consultations, a Fisheries Administrative Order was drafted and readied for official approval in early 2009 (pending the meeting of the National Fisheries and Aquatic Resource Management Council).

65. Recognition that the combination of technical interventions with other resource management measures is actually practicable if all stakeholders participate in their planning and design, as well as implementation, is another major accomplishment. This process was greatly enabled by the strong support of national and local government executives, and strong relationships with industry stakeholders.

66. *Trinidad and Tobago:* The focus of activities was on biological data collection on bycatch and discards, socio-economic information and testing of BRD and prototype trawl gear, with technical support from Mexico and participation of Venezuela. The project complemented on-going regional activities under the Western Central Atlantic Fishery Commission (WECAFC) and Caribbean Regional Fisheries Mechanism (CRFM) on the management of shared demersal stocks.

67. It resulted in a significant enhancement of the data and information on the trawl fishery, which was utilized to increase awareness and commitment within the trawl community towards co-management. The work of the national Steering Committee has been the first formal exercise to involve the participation of the fishing industry and community and interaction with the fisheries authorities. The gear testing activity was instrumental in encouraging wider participation within the trawl fishing community, including the net making sector involved in preparatory work.

68. *Venezuela*: After starting some test and experiments with BRDs already in 1985, the project enabled the country to acquire appropriate equipment (fishing gear), to carry out tests with new designs of fishing gear and BRDs (2nd foot rope, fisheye, square mesh panel, TED), place observers on board commercial vessels, and draft recommendations for shrimp trawling regulation and sustainable exploitation of the shrimp resource.

69. By generating in-depth knowledge on key concerns of the shrimp fisheries, and by generating much needed awareness, the project has placed the issue of discards and the need to reduce them on the public and policy agenda of the country. Key success factors were the availability of trained personnel within the country (research institutes and industry) as well as through cooperation with Mexico, the availability of funding through the project, and the ability to generate good cooperation and partnership with the private sector (both artisanal and commercial).

Regional

70. In the Southeast Asian region, SEAFDEC has the largest part of regional cooperation on bycatch reduction, also beyond its assistance to the two participating countries Indonesia and Philippines, and was also involved in global interaction through participation in meetings and workshops as well as providing support to countries outside the region. Some of these activities were funded through own funds, including a Japanese Trust Fund. These were also utilized to develop a programme on BRDs (in particular TED and JTEDs) before project start already in 1996. Systematic experiments, followed by demonstrations and trainings in most Southeast Asian countries, led to JTED recommendations, suitable for specific fishing grounds and target catches.

71. SEAFDEC also produced an outstanding range of information and awareness raising materials, also in local languages and translated to Spanish, among them several video productions, aside from documenting the fishing trials with JTED conducted. These materials are used for raising awareness on the bycatch issue, recognizing that JTED introduction requires both enforcement and education, in particular in a region where bycatch constitutes a considerable economic value, both for income, usually of fishing crew (marketed as food or aquaculture feeds) and direct consumption.

72. The other three regions did not have the benefit of a regional actor as strategic partner for technical support. The role of provider for technical support was assumed and carried out by Mexico for the Caribbean and Latin America region, with activities of fishing gear technologists in Trinidad & Tobago, Cuba, Colombia, Venezuela, Colombia and Costa Rica. These activities included trials with the Mexico developed prototype net, with net designs either made in Guaymas (for Costa Rica and Trinidad & Tobago) or Salina Cruz (for Colombia). Cooperation with Venezuela covered the trial of an alternative, highly selective and fuel efficient, artisanal fishing gear, the *suripera*.

73. Regional cooperation in West Africa was closest between Nigeria and Cameroon, with Nigeria not only providing technical support, but also funding for certain project activities, considering the low national project budget level of Cameroon. Additional countries of the Southern Gulf of Guinea participated in project workshops spreading technical knowledge and awareness of the bycatch issue beyond the range of implementing countries. This regional cooperation also extended to the discussion of legislation topics, including an approach for the harmonization of fishing laws, in particular relating to MCS. This process was carried out with the support from the Legal Office of FAO.

74. In the mid-east region, cooperation was largely limited to the participation in regional workshops (e.g. Kish Island 2008), also with Kuwait as non-project country, and training and some

joint planning for shrimp fisheries management involving the Regional Commission for Fisheries (RECOFI).

Global

75. Global highlights result on the one hand from the sum of national and regional activities, but they extend beyond this sum of parts on the other. Exchange of information and joint direction setting took place in meetings of the International Project Steering Committee, as well as the Global NPC Review Meeting. This was further complemented by the participation of some key project staff (usually the NPC) in international workshops on fishing gear technology (Hirtshals 2006) and in the regular meetings of the ICES Working Group on Fishing Gear Technology (Rome 2005, Izmir 2006, Dublin 2007, and Torshavn 2008, with Ancona planned for May 2009). These meetings not only provided a forum for global information exchange, they also contributed to raise awareness on bycatch issues and the project's approaches, results and effects in the greater international community, also among non-participating countries.

76. FAO, in its project coordinating function also provided technical expertise in the field of fishing gear technology to a number of countries (e.g. Indonesia, Philippines, Nigeria, Iran, and Cuba). It also served as a source and provider of technical information, e.g. through commissioning a global study of shrimp fisheries (Gillet, 2008), and a guidebook on bycatch reduction (Eayrs, 2005), which was subsequently translated into French, Spanish, Arabic, Bahasa Indonesia and Farsi. These source materials can also be accessed on the project webpage, which provides links to project documents and reports. A different level of information needs, addressing public education and awareness, was answered through the production and dissemination of video material (broadcast on BBC and numerous other stations) and a project flyer. Based on this video material and other documentation, FAO produced a DVD, available in several languages, addressing both technical persons and the general public. FAO also provided support and expertise on legal matters, relating to the formulation of new regulations and harmonizing of existing fishing laws.

Achievement of Key Outcomes

“The project countries adopted fishing technologies (including BRDs and others) and practices that are environmentally friendly”

77. The majority of project countries have adopted fishing technologies and practices that are environmentally friendly, and others have made significant progress towards adoption, e.g. through the drafting of regulations or laws readied for enactment. Through a newly drafted law, pending in Parliament for deliberation and approval, Cameroon will make the use of TED and other BRDs a condition for obtaining a shrimp fishing license. Countries already having made TED mandatory for parts of their fisheries include Nigeria, Mexico, Iran, Indonesia, Colombia, and Cuba, with some of these having pending legislation to stipulate the use of additional types of BRD. In Costa Rica, parts of the fishing industry adopted other gear modifications (2nd foot rope). Venezuela had prepared recommendations for gear modifications (2nd footrope for industrial, fisheye for artisanal boats), when a very recent (14 March 2009) legislation introduced a complete trawl ban. The Philippines has used BRDs (JTED) so far only on pilot basis, but a new Fisheries Administrative Order has been formulated and awaits approval. Indonesia drafted legislation for additional BRD use. In addition, most participating countries have introduced other management measures to reduce the environmental impact of the shrimp fisheries in general, e.g. effort controls, closed seasons and closed areas.

“The project reduced the number of juvenile commercial species, non-target fish and non-fish

species caught by shrimp-trawlers”

78. In all countries where the TED has been adopted, numbers of sea turtles caught can be expected to be reduced, though no semi-quantitative figures were obtained. Indirect measurements, such as recovery of turtle populations observed in some regions, cannot be considered, as the impact of improved protection measures of nesting sites should also be felt. Fish bycatch reduction rates measured during fishing trials can, and have in some instances, be used to extrapolate on numbers of juvenile fish protected (or fish by catch excluded). This applies to all countries where 2nd footrope, square mesh window, fisheye or other modifications have been experimented with and introduced. With experimental bycatch rate reduction of >40% (Iran, the Philippines), and up to 60% (Mexico), the reduction in the number of juvenile commercial species and non-target fish can be substantial, at least in the pilot test areas. A study conducted in Iran extrapolates and quantifies the number of escaped juveniles due to BRD use in one fishing season as 400,000 to 500,000 juveniles (Pighambari *et al.* 2003). In most other cases it is still too early to expect reliable measurements of this stress reduction indicator, other than perhaps for very specific experimental fishing grounds.

“The project increased co-operation among countries at the regional and global levels regarding shrimp fisheries”

79. Also this question can be answered in the positive, as already indicated in the foregoing chapter on regional and global level status and highlights. Most respondents underlined cooperation among countries as key supporting or success factor for achieving project results. Cooperation ranged from provision of technical support (e.g. by Mexico, Nigeria and SEAFDEC) to countries of the respective region, participation in regional gear trials or training sessions and joint regional or global workshops, and exchange of information. In particular in the West African and Middle East regions, information was also shared during workshops with non-participating countries. Nigeria even provided funding for some project activities implemented in Cameroon.

“The project improved national capacities for sound management of the shrimp trawler fisheries”

80. National capacities were strengthened and upgraded in several ways. Most basically, project funding enabled countries to acquire equipment required for conducting fishing gear trials, ranging from the manufacture of BRDs to purchase of fishing gear and sensors used in measuring gear performance, and paying for ship time if not contributed voluntarily by the fishing industry as has happened in several instances. Individual capacities were upgraded through participation in training courses and workshops, as already stated above. The production and dissemination of education, information, and awareness raising materials by the project also contributed to increasing capacities. These have been expressed in the identification of potential resource management strategies or the drafting, and in some countries starting or continuing implementation of, improved management measures for the shrimp trawl fisheries. Sound management practices introduced in some countries also included effort controls, closed areas and closed seasons. The started harmonization of fisheries laws in the Southern Gulf of Guinea for joint approaches to MCS is evidence of institutional capacity development leading beyond the issue of bycatch reduction.

Findings on Evaluation Categories

a. Attainment of Objectives and Planned Results

81. The project design focused on three main or Overall Objectives which are “(1) to reduce bycatch taken by shrimp trawlers, (2) to reduce capture of juvenile fish, particularly of species for human consumption, and (3) to increase knowledge on the impact of shrimp trawling on marine

habitats". These objectives are clearly relevant and continue to be of major relevance, as also underlined in a recent global study on shrimp fisheries (Gillet, 2008), treated in a review of the bycatch and discard issue (Matsuoka 2008), and highlighted in the "State of World Fisheries and Aquaculture 2008" (FAO 2009). The issue of bycatch reduction is also high on the agenda of the European Commission, which has issued a policy proposal to reduce unwanted bycatches and eliminate discards in European fisheries (European Commission 2007). As recently as in March 2009, the issue was also discussed during the 28th Session of the FAO Committee on Fisheries (COFI) leading to an agreement by COFI members to develop International Guidelines on Bycatch Management and Reduction of Discards.

82. Objectives 1 and 2 were formulated in such a way that Stress Reduction Indicators are appropriate for their assessment, and therefore, given the relatively short project duration, realistic targets needed to be set, which in turn required qualifying statements or comments. With these qualifications - e.g. that the objectives refer only to the trial or pilot level and to identified sub-sectors of the fishing fleet - the attainment of Objective 1 is considered highly satisfactory (HS), given the relatively high proportion of industrial fleets of participating countries having adopted and made mandatory the TED device. As the introduction of other BRD types, appropriate to reduce juvenile fish bycatch, is less advanced or complete during the project period, in particular in view of the often larger artisanal fleets, with the added issue of by catch being of considerable economic value for fishing crews, the attainment of Objective 2 is rated only moderately satisfactory (MS).

83. Hardly any contribution has been made towards the third Objective, regarding the impact of shrimp trawling on marine habitats, as no clear Outcomes or supporting Activities had been identified during project design. As stated during the mid-term review, this Objective could not be addressed effectively within the given framework (project budget and duration). It would have required a considerable amount of complex, costly and advanced research work which clearly was not foreseen in the project planning. In spite of this limitation, in some countries (e.g. Mexico, Colombia) efforts were made to reduce the impact of shrimp trawling on the bottom substrate while experimenting for improving shrimp trawl bycatch reduction.

84. Indicator and target for achieving Objective 3 have been reformulated in 2006/2007 to relate to knowledge exchange on techniques and skills (in general), and in this context this objective can be rated as fully achieved and therefore highly satisfactory, HS (cf. below on project design).

85. Consequently, this evaluation assesses the Results and Outcomes of this project with more realism and comments on the success and problems, having observed and understood the limitations caused by project planning and other constraints, e.g. developing conduits and in-country financial mechanisms. The overall assessment of the outcomes - with the exception of the one formulated as an Overall Goal and therefore practically beyond the area of responsibility of this project, cf. above - demonstrates that some excellent achievements have been made towards the design, testing and introduction of appropriate fishing technology and practice, the (formulation and) enactment of relevant legislation and management frameworks, the enhanced awareness of the problem of shrimp bycatch, and increased dialogue, interaction and cooperation.

86. Project Outcome 1 ("Minimizing the pantropical problem of unwanted bycatch from shrimp fishing") is not considered for detailed assessment, as it is overly ambitious and could have served as the actually missing Development Objective, which does not require an indicator for assessment (as further explained below - project design). The project has clearly made a significant contribution here.

87. Outcome 2 refers to adoption by several of the participating countries of fishing technologies (including BRDs and others) and practices that are environmentally friendly, so that

their shrimp trawling fisheries would be enhanced in terms of their environmental performance and reduction of biological impacts, and would be more sustainable in the future. As this outcome refers to actual introduction to fishing fleets, and sets rather unrealistically high targets, the achievement should be rated moderately unsatisfactory. However, considering the target as overly ambitious, and the absence of clear baselines, a rating of moderately satisfactory (MS) is proposed.

88. Enactment of relevant legislation and development of an improved management framework (Outcome 3) has been effectively achieved only in few participating countries, with some others having pending legislation to be enacted or regulations still in drafting stage. As target and indicator refer expressively to BRDs and not shrimp management in general – more countries have adopted regulations for closed and open seasons or effort limitation in place - this achievement is rated as moderately satisfactory (MS), recognizing that project planners and implementers underestimated time requirements for legislating and the limitations of influence of technical staff on these processes.

89. Project implementation had been rather effective towards achieving the outcome of enhancing awareness (Outcome 4) on the bycatch and discard issue, in “placing bycatch on the global fisheries agenda”. While arguing that it could even have achieved more, e.g. by applying a more comprehensive communication strategy, and by addressing this important aspect early during implementation, this achievement is rated satisfactory (S). Until recently, it was not commonly accepted to link the effect of fishing to a serious environmental problem, e.g. in conferences of fisheries managers. In the opinion of this evaluator, the project has been functional in achieving this. Therefore it has even surpassed a level of informing national policy makers and legislators for the formulation of new regulations or other legal instruments regarding bycatch reduction, as clearly has happened; still in various stages of drafting, enactment and implementation.

90. A more positive rating (highly satisfactory, HS) is applied to the achievement of Outcome 5: Increased dialogue, interaction and joint operations at the country and regional levels. This is evidenced by the generally good participation in project implementation by the private sector, and, in a similar way, by NGOs and the academe. Regional cooperation has also been identified as one of the outstanding features of the project. Cooperation among participating countries and international organisations was foreseen as necessary for the successful implementation and coordination of the project. This was achieved in an exemplary way at the level of regional cooperation, with some countries (e.g. Nigeria, Mexico) providing technical assistance to others within their region (or SEAFDEC, in the case of the Southeast Asian region), through regional workshops and through dissemination of information generated (e.g. publications).

91. The result regarding adoption of improved technology and practices (on bycatch reduction) is clearly tied to the one on the design and enactment of relevant regulations and legislation, and improved management. Already the mid-term review noted that this area is usually beyond the responsibility of fishing gear technologists, the immediate government stakeholders of this project, and again the time requirement for drafting and passing legislation has probably been grossly underestimated. In spite of this, notable progress in this area has been observed in most participating countries, concerning some sub-sectors of the trawl fisheries, primarily the commercial fisheries, with regulations put in place on making BRD installation mandatory, limiting fishing effort, or closed seasons.

92. These positive results, either on output or outcome level, are all very relevant, and the rating level for **relevance** is therefore **highly satisfactory (HS)**. Results actually exceed expectations, as it must be assumed that - contrary to respective statements in the Project Document - the participating countries did, at the time of project formulation, not yet place high priority (e.g. as manifested in policy measures) on bycatch reduction (noting that in some countries bycatch is perceived as of considerable socio-economic value, practically negating interest in its reduction). But it is probably true that there was a very positive attitude among fishing technologists and

ecologists, also evidenced in attention to the subject and implementation of technical trials prior to project start (e.g. in Colombia, Cuba, Iran, Mexico, and by SEAFDEC), on which the project could build and which explain some of the outstanding achievements made possible through the project.

93. There have been some efficiency losses at project start (further explained below, financial planning), which have caused considerable (> 1 year) start-up delays in some participating countries. Given the relatively high level of co-financing generated, some countries used national funds instead for implementation of project activities before they could effectively access project funds. This category is therefore assessed **satisfactory (S)** for **efficiency**.

94. Overall **effective** attainment of objectives and planned results, as per original and revised project design, has not reached optimum rating levels. Taking the limitations, and how they have been addressed, into account the results can be considered as **satisfactory (S)**. The overall attainment of project objectives and results is therefore rated **satisfactory (S)**.

b. Sustainability

95. Focus on promoting the drafting of regulations and legislation during the last project year has been considered in fact as instrumental for sustainability and part of an exit strategy. The evaluator argues that earlier attention and more emphasis on this matter could have been provided. The project has clearly made impacts on the policy and strategies of some participating countries which can be rated as sustainable. This is reflected through the expression of increased awareness on bycatch and discard issues, the drafting and, in some instances, enactment, of legislation and regulations, and through dedicated management plans for shrimp fisheries in some cases.

96. This also includes countries and regions where bycatch is of considerable economic value (Africa, Southeast Asia). With the progressing implementation and enforcement of related legislation it can be expected that the environmental impacts or longer-term effects will increasingly be realized, and, as a matter of fact, can only be assessed after some longer period of more regular and widespread BRD use. In some tropical fisheries impacts of improved management measures can be expected to become measurable after relatively short periods of time (1-2 years) in the case of fast-growing species, but for the escaped juvenile bycatch, usually consisting of longer-lived demersal fish species, a period of 3-5 years should be more realistic.

97. Stakeholder ownership level, e.g. for expecting widespread voluntary adoption of BRDs, given that there is still apprehension about possible shrimp loss (and commercial fish loss using fisheye) through BRD use, is still rated relatively low. Interviewed fishers, however, expressed that while not wanting to voluntarily adopt BRDs now – even when convinced that this would be an environmental friendly practice – they would comply with BRD use once this would be regulated by law and enforced.

98. The sustainability of the project results for the immediate future will largely depend on funding made available from participating governments, funding agencies and/or donors, as well as voluntary contributions, more in actions than in funds, from the private sector. In some countries, where new regulations, laws or policies have been drafted and are still pending in the legislative process (e.g. Cameroon, Colombia, Indonesia, Philippines, Trinidad & Tobago, Venezuela), commitment to enact these is required and also expected, but it will need additional resources to enforce or generate compliance. This is because, as enthusiastic and willing as they are to contribute, the countries, for the most part, are facing severe economic problems. It is encouraging to note that bycatch reduction related activities are at present still on-going and implemented, e.g. fishing trials involving artisanal gear in countries, using national funding, which also attests to successful country-ownership of project activities and results and to project sustainability.

99. In the case of industrial shrimp fisheries of shrimp exporting countries, the need to comply with importing market demands (e.g. certification for environment friendly shrimp fishing gear) will be a driver or incentive to maintain and even enhance the use of TEDs. Market forces can be considered the contextual circumstances to sustain project outcomes over time.

100. At a global level, the move to combine major project meetings or workshops with the symposia of fishing gear technologists under the ICES-FAO Working Group on Fish Technology and Fish Behaviour (WGFTFB) is considered logical and very supportive to sustain project results and maintain exchange among key project participants. The project also caused a process towards sub-regional cooperation in marine fisheries monitoring, control and surveillance in the Southern Gulf of Guinea, and on the harmonisation of fisheries laws and regulations, which is expected to continue and show effects over time.

101. **Sustainability** of project results is likely, but for stated reasons not fully assured given that actual project implementation period was relatively short. Therefore the rating for this category is downgraded to **moderately likely (ML)**.

c. Achievement of Outputs and Activities

102. The expected results of the Project Document (disregarding the one relating to habitat impact or gear-substrate interaction, which had by agreement not been covered) echo the three outcomes on bycatch reduction technology adoption, improved resource management, and cooperation among countries. The project planning does not set quantifiable targets for either of them, and therefore it is at the same time easy and difficult to assess achievements. Relatively easy in case of national, regional and global level cooperation, as good examples have been observed and reported. Difficult in the case of the other two result areas, as the project planners clearly underestimated the time and effort requirements for substantial research, development and technical trials to design and test bycatch reduction devices, measures or practices, to analyze results and prepare recommendations, and to effectively support their adoption by the shrimp trawling fishery.

103. Nevertheless, there are examples of recommendations issued in some countries for certain types of BRDs (e.g. grids, JTEDs), and for notable segments of some national fisheries (e.g. Cuba, Indonesia, Iran, Mexico, Nigeria) BRDs have become mandatory. The fishing gear trials, assessing technical performance and effects of different gear modifications or BRDs have been carried out to a high professional standard, as could be expected from the effective cooperation between national fisheries research institutions and local universities, participated in by the private sector and NGOs. The participatory approach, enabling successful involvement of the private sector and other stakeholders, in the conduct of fishing gear trials and drafting of new regulations is another positive feature of the project and also underlines credibility and integrity of the information which underlies the project outputs.

104. It must also be clearly stated, that in the opinion of the evaluator, more fishing trials will be required, considering the wide range of gear types and sizes, and possible modifications of BRDs (e.g. their optimum dimension and location in the trawl net), with the differences in vessels, fishing grounds and seasons not even considered. In this way, the number of fishing gear experiments may not have been sufficient, but was probably the maximum possible to achieve under given conditions.

105. There is a clear emphasis on technological issues in the project. A similar emphasis on socio-economic topics, or a more holistic approach to the bycatch issue, and attention to a more comprehensive communication strategy would have been desirable, but probably not very realistic to expect, given the predominance of fishing gear technology as an entry point and continuing

theme of the project on the one hand, and the relatively limited resources (on per year, per country basis) and implementation time. Nevertheless, the completion of some socio-economic studies (e.g. in Mexico and Trinidad & Tobago) are positive exceptions, and some very impressive and useful communication, promotion and awareness raising materials have been produced by the project partners.

106. An inventory of bycatch reduction devices has been produced and disseminated (in several languages) by FAO in form of the manual “A guide to Bycatch Reduction in Tropical Shrimp Trawl Fisheries” (Eayrs, S. 2005), as well as that of the legal and policy framework in partner countries (though not yet disseminated). All countries assessed catch and bycatch composition, in form of baselines and during trials to determine effect and impact of BRD use. Technologies have been developed and tested, though to a lesser extent in the artisanal fisheries than the commercial sector, alternative gears only in exceptional cases (e.g. *suripera* in Mexico and Venezuela). Demonstrations and training, for both fisheries staff and fishers, have been conducted and results have been disseminated. Clearly, in particular for capacity building and awareness raising, more activities would have been highly desirable, but would have required additional time and funding. Planned outputs have been delivered in the quantity possible, in good quality and timely; the rating for this category is therefore **satisfactory (S)**.

d. Monitoring and Evaluation (M&E)

107. Tools and procedures for M&E have been mainly through the periodic meetings of the governing bodies of the project, and through the employment of an independent consultant to assess project performance and impacts through the mid-term review in 2006, aside from the regular progress reporting of participating countries to FAO, followed by the Project Implementation Review of UNEP/GEF. With some obvious limitations, as further explained below, this monitoring system has provided an acceptable, or moderately satisfactory, level of guidance to project management.

108. It must be stated that the deficiency of the project planning matrix did obviously not support smooth implementation of M&E, and no evidence of an effectively utilized monitoring plan for the country-level workplan was noted which could have been a consequence of insufficient training on M&E at the field level.

109. This fact is not considered very unusual, as it must be recognized that at the time of project planning, true goal or results oriented project planning (e.g. ZOPP) methodology was not yet fully applied, and, more importantly, certainly only a very basic understanding of its concepts, or M&E in particular, was present in the participating countries. This finding is supported by the observation that the evaluator’s inquiries regarding this topic were initially misunderstood as referring to Monitoring, Control and Surveillance (MCS), or on-board observer programmes of fish catches by almost all questionnaire respondents. A necessary corrective action would have been, to conduct – at project start or still from 2006 onward – intensive training on M&E methodology and application.

110. More functional indicators relating to project process and stress reduction, as more recently becoming mandatory for all GEF funded projects (Duda, 2002 and related GEF Guidance Information) were communicated by UNEP during the Global NPC Review Meeting in Manila four years into project implementation (or halfway into its lifetime, considering initial delays). These indicators, though covering correctly predominantly the process outcomes, apparently could only be retrofitted and used with difficulties. Given the short implementation period, and the difficulties entailed in measuring them, aside from the fact of generally absent baselines, the use of stress reduction outcome indicators should probably not be expected, or at least no meaningful positive

ratings. The project team recognized this and supplemented the ratings given with qualifying remarks.

111. The project planners and managers have identified a considerably large number of risks. The so-called “internal risks” have been managed well, and as such were to a large part successfully “internalized” by adaptive project management, as should be the case. “External risks”, related to political stability, environmental conditions, capacity issues, as well as social, cultural and economic factors have also been identified and observed / managed. Of these, only the latter has shown some influence on project implementation and may have slowed down uptake of project results, as bycatch has inherent economic value for some coastal people (in particular in the African and Southeast Asian region) which conflicts with the goal of reduction.

112. This terminal evaluation, carried out by an individual evaluator, also constitutes part of the project’s M&E system or process. An interdisciplinary evaluation team, visiting a larger sample of countries, would probably have had a better chance to do justice to a global project addressing a complex environmental problem and covering a wide range of issues and concerns. This was not possible, however, for budgetary reasons. This and the fact that targeted training on M&E, though clearly desirable and necessary, had not been planned or carried out, point also at the likelihood of underfunding of M&E for this project.

113. Being a project in transition between traditional approaches to M&E, and more recently adopted progressive M&E application, the quality of M&E should actually not be rated according to standards not yet existing (or fully applied) when project design took place. Considering that M&E planning showed deficiencies (unsatisfactory, U), which have been moderately successfully addressed in M&E implementation by adaptive management in participating countries, and that overall project M&E implementation has contributed to successful outcomes, this category is rated as **moderately satisfactory (MS)**.

e. Catalytic Role, Replication

114. While the project could not realistically be expected to “minimize the pantropical problem of unwanted bycatch from shrimp trawling”, it clearly offers high potential for upscaling and further progress towards that goal in several ways. Technologies developed, i.e. devices (BRDs) and practices identified and recommended through this project, can and should be transferred to other geographical areas, within the participating countries, and also to other countries with shrimp trawl fisheries. The same applies to other lessons learned, e.g. the highly participatory approach, but also modification of the technology-focussed approach towards a more holistic one, giving at least equal emphasis to economic, regulatory, and knowledge management functions.

115. Scaling up is further possible and desirable by paying more attention to the artisanal sub-sector, which is often larger than the industrial, but has obviously a different structure, uses different markets and operates in a different socio-cultural and economic context. Experiences from some of the participating countries, e.g. Mexico, Iran and Venezuela, provide very useful examples on how to extend the approach to the artisanal shrimp fisheries. In Mexico, the project has already led to follow-up projects, implemented through Government-NGO (WWF) cooperation. SEAFDEC as a regional project partner routinely involved ASEAN non-project countries in their workshops, training, and information dissemination on bycatch management. It is further possible to speculate how the approach towards bycatch reduction could be extended or scaled up to other fishing gear, targeting different resources but also exposed to the bycatch issue. While instruments and initiatives for the longline fisheries have already been developed and promoted (e.g. reduction of seabird or turtle bycatch), fish trawls, beach seines and entangling nets could also become focus of related projects.

116. Funding for such scaling up efforts would need to be sourced from national governments, sensitized by effective awareness raising, with contributions from the private sector. At this stage, however, additional project funding from donors interested in environmental issues and sustainable resources management, would also be justified. One such donor had already expressed interest during the recent 28th Session of the FAO Committee on Fisheries. The Committee noted that managing bycatch is an integral component of implementing the ecosystem approach to fisheries. There was broad support for a Norwegian proposal to develop International Guidelines on Bycatch Management and Reduction of Discards, and to convene an Expert Consultation followed by a Technical Consultation. Norway informed that it would make available funds for these activities.

117. The issue of bycatch management and discard reduction also receives increased attention from International NGOs (e.g. Worldwide Fund for Nature, Conservation International) and will also be addressed in the planned Coral Triangle Initiative (CTI). The project, through its actions and its many useful information and awareness raising materials, is showing an excellent potential for scaling up and replicability, but it would be too early to expect actual examples already in place and observable in a significant number of partner countries. This category is therefore given the overall rating **satisfactory (S)**.

f. Preparation and Readiness

118. The quality of project design is the first obvious focus of this rating category. The project design lists three main or Overall Objectives which are “(1) to reduce bycatch taken by shrimp trawlers, (2) to reduce capture of juvenile fish, particularly of species for human consumption, and (3) to increase knowledge on the impact of shrimp trawling on marine habitats”. The Logical Framework Matrix of the Project Document of 2002 contains, aside from the three Overall Objectives, also five Outcomes and four Results, as well as eight Activities (Components), encompassing essential and relevant elements required to effectively address the core problem, the high level of bycatch and discards of fish and non-fish fauna by shrimp trawlers.

119. However, as already noted in the findings of the Mid-Term Review of this project in 2006 (Westlund 2007), the project document is not as clear and concise as it could have been, and the elements of the project planning matrix are not always linked logically, i.e. activities are not clearly supporting defined results and outcomes, or certain results are not supported by defined activities. Still more problematic is the fact that at least one Outcome (“Minimizing the pantropical problem of unwanted bycatch from shrimp trawling”) is formulated as far more encompassing than the Overall Objectives, which are already considered too ambitious to be fully achievable within the time frame and budget of the project. In addition, the majority of the Objectively Verifiable Indicators of the original planning matrix can not be considered as operational, i.e. quantifiable and measurable by the project, while assumptions and risks are not properly defined and no mitigation or monitoring measures were noted as effectively put in place in the original Logframe and applied. As stated above, this is not too surprising, given that Project Cycle Management and similar approaches were not yet fully mainstreamed at the time of project formulation. Therefore these findings will be common to many project designs of the time. Also, some of these issues were addressed by adopting new Indicators in 2006/2007, with the implication that these indicators had not been developed in a participatory way and that they were improved, but not easily applied to the existing original Objectives and Outcomes.

120. These serious issues - though not all entirely new findings - have major consequences for the evaluation process and for a fair assessment of project performance. It can and must be stated that in spite of this somewhat defective planning process and the resulting project document, considerable progress has been made, and some very good results were achieved and outcomes produced.

121. The planning matrix contains the essential elements - e.g. technology, knowledge generation, awareness, capacity building, regulations, management, cooperation -, but the lacking logical stringency does neither provide for the clear identification of necessary prerequisites, and supporting measures for the achievement of Outcomes or Results, nor any ranking or logical sequence among them.

122. It is therefore understandable that there was an early emphasis on technology in project implementation, as also following from the selection of key government implementing partners in the respective countries. However, the other important elements of education (awareness), legislation, and management, which were of course all addressed and covered to various degrees in the participating countries, should have ideally received similar emphasis early on in project implementation. Additional partners, providing the expertise in these fields, should have been brought into the project early on. It remains of course questionable if this could have been achieved, given the relatively short project duration and the limited budget, e.g. on per country, per year basis.

123. The overall Objectives, regarding the reduction of bycatch in general and capture of juvenile fish in particular, were strongly stated, and the project has clearly made a contribution towards these, though at this time largely limited to the experimental fishing areas, and to those shrimp fishing grounds and sub-sectors (i.e. commercial fisheries), where the installation and use of some kind of BRD or other gear modifications, e.g. fisheye, square mesh window, second foot rope, have become mandatory as a result of the project.

124. At the time of project commencement, capacities in the participating countries varied widely; countries with prior bycatch reduction trial activities obviously being in a more advanced position (e.g. Iran, Mexico). National work plans were elaborated, giving due consideration to specific priorities and existing capacities. Technical assistance was provided from “resource countries”, and also through FAO technical expertise. While this sharing of expertise was highly appreciated, some countries stated that more assistance, especially in an early project phase would have been needed.

125. The intended users of the project outputs were clearly identified. Direct beneficiaries of the project were the government authorities and the affiliated institutions in fisheries research and management with their individual fishing gear technologists and other experts on the one hand, and the private capture fisheries sector engaged in shrimp trawling, with their master fishermen and boat owners on the other. The ultimate beneficiaries of the project are the people dependent on the fisheries resources in the participating countries.

126. Main project implementation partners were the fisheries research agencies or fisheries management authorities of participating countries which in turn established partnerships with academic institutions (e.g. fisheries or fishing technology universities) or NGOs for specific tasks, as appropriate. These arrangements, and the identification of respective roles and responsibilities, have generally worked well and contributed to successful project implementation. Enabling legislation, i.e. legal instruments which supported the implementation of the planned fishing gear trials were in place in all participating country, mostly on national, but also on local government level for trials carried out within the jurisdiction of coastal districts or cities (e.g. in the Philippines).

127. Staff resources for starting and implementing project activities were generally present and sufficient (perhaps with the exception of Trinidad & Tobago), and it should not come as a surprise that among the twelve participating countries there were also some instances of high fluctuation of personnel e.g. where re-assignment or rotation of key management staff is part of human resource management planning (as in Indonesia).

128. Overall, preparation and readiness are rated moderately unsatisfactory (MU) with regard to project design, but **satisfactory (S)** for all other concerns and also as overall rating.

g. Country Ownership / Drivenness

129. Country ownership is expressed on several levels. At the level of implementation, in the countries visited during this evaluation, but also as concluded from the analyzed questionnaires, country ownership is obviously high in terms of this project being country-driven as compared to a donor-driven project. This is also expressed in the interest and willingness of Governments to participate in a possible second phase project on bycatch reduction, cognizant that the project which ended in 2008 has been most successful predominantly in generating information and knowledge and fostering cooperation. As stated above, BRDs have already become mandatory and are routinely used by certain segments of shrimp trawling fisheries in some countries, but there is clearly a need to support the drafting, enactment and enforcement of respective legislation in some countries, where this is still in preparation or pending. There is also a need for more or repeated fishing trials to identify and optimize bycatch reduction devices where conclusive results are not yet available, e.g. with regard to different fishing grounds and seasons, or for the artisanal fishing sector, as the focus so far has been on commercial fisheries, with some notable exceptions (e.g. Iran, Venezuela).

130. The readiness to address the environmental issues related to shrimp trawling is clearly evidenced by the started processes in the participating countries relating to legal review and formulation of new regulations with regard to BRD introduction and shrimp fisheries management in general. These legislative processes will still require substantial amounts of time, as well as support, and are probably in competition with other legislation priorities, or even in conflict with short-term production goals or other economic targets. This fact, however, does not diminish the overall impression of great enthusiasm of key government partners interviewed and their assessment of the status in their respective countries. Rating for country ownership is therefore **highly satisfactory (HS)**.

h. Stakeholder Participation / Public Awareness

131. The relatively high level of stakeholder participation, as to the engagement of the private sector (fishing industry and fishing gear manufacturers), but also of other partners ranging from local governments to academe and NGOs, has been identified as a key supporting factor for the project success. Stakeholder participation has been secured generally through direct engagement in consultations, and through providing feedback. There are some very positive examples of NGO and university participation, notably in Mexico (with WWF) and Indonesia, Venezuela, and Trinidad & Tobago (with universities and technical colleges), or cooperation between different government institutions and local governments (e.g. Iran, Philippines). Some outstanding publications and awareness raising materials have been produced by the project, in particular audio-visual materials. A synthesis of this material would still be very useful.

132. The wider public, expected to be affected by the project or interested in its outcomes was usually informed through the dissemination of workshop results, also with the help of local news media. The project also used its publications or promotion materials to inform about its activities and achievements. Promotion materials consist of project flyers, posters or leaflets, but also to a considerable extent of video productions, some of which have achieved the highest level of outreach. This refers in particular to the BBC (Earth Report), produced by the Television for the Environment (TVE), FAO's own project DVD, produced also by TVE, and video materials produced in some countries and by SEAFDEC. A copy of information materials addressing a particular group, in this case a colouring book for children, was also seen in Iran.

133. The project website, arranged and maintained also after project termination by FAO, is a further important medium for interaction between various project partners and institutions, or functions as a means for information dissemination.

134. The approaches and processes for stakeholder engagement have been applied overall successfully, and this category is therefore rated as **highly satisfactory (HS)**. The evaluator argues that, under a more holistic approach, there is the need for additional stakeholder involvement, in particular in the academe or NGO sector, e.g. for areas of research and policy development which so far have received less or little attention, i.e. socio-cultural and socio-economic topics. A more comprehensive or systematic communication strategy could also have disseminated information on project purpose, features and outcomes more widely among affected coastal communities or entire stakeholder groups (e.g. fishers, school children, fish consumers).

i. Financial Planning

135. The need to develop functional mechanisms for funding to reach implementing partners (usually the fisheries research institution of a country) led to some delays in early implementation of the project. The obvious instrument of choice of FAO, the “Letter of Agreement”, was not acceptable to a number of countries, as it would have meant transferring the funds to the national treasury, from where they could only have been accessed with considerable delays, and possibly only in part. Therefore, the commonly agreed mechanism was the transfer of funds to the FAO Representation in the respective country, from where it could be accessed to cover expenses for activities (fishing trials, workshops, information materials etc.). This mechanism, consisting of a submitted quotation, cash advance, and later liquidation of the advance, was found acceptable and operational by the NPCs. Other expenses, such as procurement of equipment or services, were handled directly by the FAO Representation.

136. This approach meant that the operational involvement of FAO, in this case in-country, was far higher and more intensive than planned, leading to additional costs (and effective in-kind project contribution) of FAO. It also meant that there was a high level of financial and operational control, as submitted quotations or budgets (for project activities) were cleared both for availability of funds and technically by FAO operational and technical staff, and administered by FAO Representation staff.

137. It is hardly surprising that findings comparing project cost and planned budget, with the benefit of hindsight, lead to the comment that fund levels in some instances should have been increased or, if not possible, redistributed among countries. This is in particular the case for regional activities, but could also apply to countries like Indonesia or the Philippines for their national activities, strengthening both practical work (additional fishing trials) and information management (additional activities on awareness raising). The budget for Cameroon at some stage was supported by Nigeria (for regional workshops), and the planned level of funding for Cuba also appears small, but could in this case be increased substantially through government co-financing. SEAFDEC planned budget was also relatively small and given its instrumental role in regional cooperation in Southeast Asia, and as a provider of information, both technical and public, it was fortunate that it also was increased through self-acquired funding (e.g. Japanese Trust Fund).

138. Co-financing, including the contribution of FAO, to the level of US\$4,370,000 had been expected in the project design. According to the reports received from the NPCs, the project had not only been able to leverage this amount, but clearly surpassed it (US\$5,880,000). The relative short-fall of co-financing from the private industry is more than compensated by the contributions from governments (and FAO). While FAO grants and in-kind support (US\$1,650,000) consist mainly of staff time (e.g. for operational and technical expertise), the grants and in-kind support of participating countries cover a wider range of budgets and items, including some considerable

investment into modified fishing gear and BRDs (e.g. Mexico), on the basis of recommendations issued by the project based on its gear trials and findings. Overall co-financing exceeds the level planned by approx. 70 %. This statement, however, is based largely on reports received from the partner countries.

139. Financial planning, which had been able to solve the considerable early difficulties, and leveraged considerable co-financing is therefore rated **satisfactory (S)**.

j. Implementation Approach

140. The implementation approach has proven successful and is rated **highly satisfactory (HS)**. Project management had to face several considerable challenges: participating countries in four vastly different geographic regions, with different levels of preparedness, readiness and also resources, dealing with a topic of high relevance, but not yet a commensurate level of recognition or policy priority (contrary to the related statement in Section 4.1 of the project document). This was addressed through intensive operational support and a management structure and framework taking into account the need for adaptive management. Still the wish for more intensive exchange on the implementation approach and the need for a tool like project implementing guidelines were seen as desirable, particularly in the early implementation phase by Iran and the Philippines.

141. The structure, consisting of International Project Steering Committee (IPSC) and National Project Steering Committees (NPSC), as well as National Project Coordinators, has served the project well. There has been some fluctuation in staffing of the NPC positions (e.g. in particular in Indonesia), but this is to be expected in government service and has not affected implementation in a major way. The role of the NPSC has proven essential to the smooth implementation on national level. It was therefore important that the NPSC was truly representative of the sector and composed of key stakeholders from various institutions (government, NGO, academe, private sector) close enough to the project to provide oversight, advice and direction. NPSC were most effective when they were created for the purpose of the project, as compared to an NPSC installed by designating additional responsibilities to an already existing body or committee. In this case, or supplemental to an effectively functioning NPSC, the creation of a Technical Working Group (TWG) or Advisory Committee, as in the Philippines, can also be considered as a useful step. The committees created for the sake of this project were sometimes actually a “first of a kind” for fisheries managers sitting together with industry representatives, offering a forum where also wider issues affecting the industry could be discussed and resolved.

142. Implementation partnerships with academic institutions, NGOs, and local governments, whenever formalized and practiced, turned out to be essential and supportive to producing the outputs and attaining objectives.

143. The recognition that the existing Logframe could not be followed easily, or did not fully support on-the-ground planning and implementation, led to a practice of well applied adaptive management. This does not refer to the drafting and use of individual country work plans, which are considered another positive feature of overall management, but in particular to the major changes in M&E required when adopting the new Indicators in 2006. This fact clearly presented some administrative and operational constraints which were overcome. It would possibly have had more positive effects on the project if these changes could have been taken into account and implemented earlier in project life.

k. UNEP and FAO Supervision and Backstopping

144. The role of UNEP as Implementing Agency, beyond the obvious link to the fund source GEF and assisting in monitoring and evaluation, was not clear to most responding countries. This

could have been clarified better or been enhanced. Given that the project is of direct relevance to major UNEP Operational Programmes, UNEP could have taken a more active role in networking this project with other relevant UNEP-funded or implemented activities concerning aquatic resources and habitat conservation and biodiversity (e.g. Regional Seas Programme).

145. FAO as Executing Agency has effectively fostered cooperation, and also provided technical backstopping, as well as project operation and coordination. The need to establish effective mechanisms for funds to reach project implementers has delayed start-up in several countries, or compelled them to utilize Government co-financing before project funds became available. The utilization of “Letters of Agreement” had been planned as standard mechanism for channelling project funds to implementers, but this was not possible in most participating countries, and alternative mechanisms had to be put in place in a time consuming consultative process. Some countries expressed the need for more and better access to technical expertise, either through longer or more frequent training visits, e.g. through a dedicated technical consultants group, particular in the early phase of the project. This could have been considered in project design. As an average rating for both agencies, this category is rated **satisfactory (S)**.

I. Cost Effectiveness

146. There are a variety of issues to be covered under the category on cost-effectiveness, some of these seemingly unrelated. The project has incorporated and benefited from technical and scientific information, e.g. on fishing gear behaviour: flume tank experiments during a workshop in Hirtshals, Denmark, and basic or supporting information from fishing gear trials in developed countries studying the same issue. It also incorporated information on fish and shrimp behaviour towards fishing gear and in reaction to BRDs, and other biological and resource assessment and status information. To a lesser degree, this statement also applies to social and economic sciences information. On the basis of the application of this information, and the various activities conducted, the project has added value by increasing knowledge and awareness for resource managers, policy makers, and the general public. The fact that project implementing partners in the countries usually were fisheries research agencies or closely cooperated with university institutes assured incorporation of scientific information.

147. As stated above, there had been considerable delays in several countries (caused by the need to develop financial conduits for project funds to reach implementing partners). In part these could be mitigated by the partners’ ability to use government funds, and also through their ability to leverage private sector contributions, mostly in kind (e.g. ship time or fishing gear). This co-financing was not limited to, or characteristic for, the early implementation of the project, but more commonly for the entire duration. The relative short-fall of co-financing from the industry is more than compensated by the contributions from governments (and FAO). While FAO grants and in-kind support consists mainly of staff time (e.g. for operational and technical expertise), the grants and in-kind support of participating countries cover a wider range of budgets and items, including the heavy investment into modified fishing gear, BRDs or buy-back of fishing licenses (e.g. Iran, Mexico). Overall co-financing exceeds the level planned by approx. 70 %. This statement, however, is based largely on reports received from countries.

148. Considering the addition of the full level of co-financing would bring the overall project budget to a total value of approx US\$ 12 million. While fully recognizing that activities and achievements varied widely from country to country, a rough calculation would result into an average budget of US\$ 1 million per country, or US\$ 200,000 per country per year (considering for the sake of this example only five effective years of project implementation). Taking this level of funding into account, the project should be considered as overall highly cost-effective, having produced the impressive range of outputs and made significant progress towards achieving the highly ambitious objectives. A similar calculation for the GEF project funds only, disregarding all

co-financing sources, obviously leads to an even far more impressive manifestation of cost-effectiveness.

149. Project results in this form, on national, regional and global levels, would not have been achieved under a different set-up, be it by national budgets alone, through FAO's normative work with countries (e.g. under the CCRF), or other donors. The rating for this category is therefore **highly satisfactory (HS)**.

m. Impact

150. The project, as outlined under "Achievement of Key Outcomes" and rating category a) above, has already achieved impact in several ways: project countries adopted fishing technologies (including BRDs and others) and practices that are environmentally friendly; it reduced the number of juvenile commercial species, non-target fish and non-fish species caught by shrimp-trawlers; it increased co-operation among countries at the regional and global levels regarding shrimp fisheries; and it improved national capacities for sound management of the shrimp-trawler fisheries. These impacts are instrumental to achieve in future further stress reduction and environmental status related impacts, such as the conservation or rebuilding of fisheries resources and long-lasting, sustainable benefits derived from their utilization. There is a potential to also achieve these longer-term impacts, but additional investment, from the participating countries with outside support, is clearly required.

151. The evaluated project, given its duration and funding level, should realistically be expected to only lay the solid foundation towards achieving impact on environmental status, and it has done this successfully, also causing valuable outcomes in form of capacity building, knowledge generation, and awareness raising. Therefore the rating for this category is **highly satisfactory (HS)**.

152. Capacity building, e.g. for sound management of the shrimp trawling fisheries, was an important focus of the project, and the evaluation found evidence that the project was very successful in building up individual and institutional capacity in the participating countries. Reasons for success include the enthusiasm and strong support of the various stakeholders, especially of the Governments themselves, which have demonstrated their political will to act nationally and also foster regional approaches to finding solutions to the common issue of bycatch and discards. Secondly, the project enhanced capacities through providing access to equipment and facilities which was put to good use in fishing gear trials. Lastly, the project enabled the training of fishing gear technologists and fishing industry representatives. Some training also took the form of "Training of Trainers" (ToT), which enabled the training of larger numbers of fishers in the use of BRDs and more responsible fisheries (e.g. in Nigeria).

153. Further enhancement of capacity building can be expected under continuing government funding only within limits of tight national budgets. Participation of key project personnel in related international workshops or seminars (e.g. ICES Working Group) will hopefully continue. On the subjects of knowledge generation and awareness raising which can be considered as closely related, further enhancement is possible, required and expected in form of continuing documentation and publication of past and present fishing gear trials, and continuous or improved dissemination of this information. Several national reports consulted for this evaluation were still in draft form and require finalization for upload to the website and for further dissemination. Promotion and awareness raising materials produced (for general public) should still be utilized in a systematic way, as best laid out in a communication strategy (global and with national adaptation).

154. Future impact assessment will have to utilize a combination of different approaches. There will be a need to commission studies and surveys, addressing certain issues not yet well covered, and others only measurable at a later stage, such as the socio-economic and environmental impact of improved bycatch reduction. This entails basically research work, for which mostly standard

methodologies apply. Quantitative surveys, e.g. of improved income of artisanal fishers targeting species which have escaped as juveniles from shrimp trawls equipped with BRD, will be supplemented with stock assessment work of resources expected to improve through bycatch reduction (concentrating on charismatic or indicator species). These approaches will be supplemented with less quantitative perception surveys, assessing changes or improvements in attitudes and practices.

Table 1. Overall Ratings Table

Criterion	Evaluator's Summary Comments	Evaluator's Rating
A. Attainment of project objectives and results (overall rating) Sub criteria (below)	within the limitations of project design, attainment of objectives excelled	S
A. 1. Effectiveness	project made effective use of funding available	S
A. 2. Relevance	project outputs and outcomes highly relevant	HS
A. 3. Efficiency	slight downgrade due to efficiency losses in start-up period, and the sequential, rather than simultaneous treatment of important aspects (technology, legislation, information)	S
B. Sustainability of project outcomes (overall rating) Sub criteria (below)	project outcomes on stress reduction and environment status level need further government (or donor) action to be secured or further enhanced	ML
B. 1. Financial	some evidence that national budget is accessible (within limits)	ML
B. 2. Socio-political	political will proclaimed	ML
B. 3. Institutional framework and governance	legislation and regulations, if not already passed, pending for enactment	ML
B. 4. Ecological		
C. Achievement of outputs and activities	outputs of good quality achieved in timely manner, evidence that these are used	S
D. Monitoring and Evaluation (overall rating) Sub criteria (below)	fully successful application could not be expected given design limitations, and possibly insufficient skills transfer	MS
D. 1. M&E design	original design dependent on logframe / project design unsatisfactory; change to	MU

Criterion	Evaluator's Summary Comments	Evaluator's Rating
D. 2. M&E plan implementation (used for adaptive management)	advanced indicators led to difficulties standard tools (meetings, reports) used with some success	MS
D. 3. Budgeting and funding for M&E activities	more effective application would have required more funding (for training and terminal evaluation)	MS
E. Catalytic role	contribution to global awareness of and attention to bycatch issue, some replication evidence in Asian and Latin America regions, but so far mainly high potential	S
F. Preparation and readiness	actually highly satisfactory concerning aspects under direct control of stakeholders, but downgraded due to issues with original logframe design	S
G. Country ownership / drivenness	evidenced by pre-project experience (some), and full support and leading role in implementation	HS
H. Stakeholders participation	participatory and consultative approach have been instrumental	HS
I. Financial planning	initial difficulties were overcome and respondents expressed high satisfaction with modality chosen and its result	S
J. Implementation approach	committees' roles and functions very supportive of implementation; project foundation found good solution for complexity of global operation	HS
K. UNEP and FAO supervision and backstopping	UNEP role could have been enhanced, while respondents rated FAO involvement as highly satisfactory	S
L. Cost-effectiveness	value of outputs produced, outcome generated and impact caused so far greatly outweighs budget invested	HS
M. Impact	within limitation of duration and budget, present impact generated actually exceeds expectation	HS
Overall rating of project		S

5 Conclusions

Overall Rating

155. The overall rating of the project is **satisfactory (S)**. There could be, in theory, reasons for upgrading the project rating to highly satisfactory due to the fact that the problems with the overly ambitious project design (preparation), sustainability and project M&E, were largely inherited – and that the adaptive project management was able to mitigate these to a large extent during implementation. Also, as a consequence of a questionable assumption in the project document (i.e. bycatch already being a policy priority before project start) one of the major valuable outcomes (putting the bycatch issue on the policy agenda) is practically negated.

Project Design

156. The observed problems with project design (elements of the project planning matrix not always linked logically, i.e. activities not clearly supporting defined results and outcomes, or certain results not supported by defined activities) have clearly resulted in a challenge to project implementation and M&E. However, on country level this was overcome through formulation of and adherence to country work plans. Outcome 1 (“Minimizing the pantropical problem of unwanted bycatch from shrimp trawling”) should not have been included, or, if considered essential, moved to the level of overall objective or development goal. In this way, it would have been assured that the project made a significant contribution towards it, but was not expected to fully achieve this during the five (six) year project duration.

157. As the majority of the objectively verifiable indicators of the original planning matrix had not been operational, i.e. quantifiable and measurable by the project, they needed to be replaced or substituted by more suitable indicators in 2006/2007. The fact of introducing and adopting such measurable indicators and targets is considered an improvement, but this happened at an advanced stage of implementation and also entailed difficulties with implementers who were not fully familiar with M&E. Even these new indicators required a number of qualifying statements (i.e. footnotes in PIR sheets) which indicates that it posed some additional problems to apply these to the original or only slightly modified project planning.

Project Performance

158. The project must be seen as a first crucial building block in a longer-term approach to dealing with the bycatch issue on a global scale. However, the overly ambitious formulations in its original design suggest that it was unrealistically expected to lead, already during its implementation period, to its solution. This needs to be taken into account when judging or rating its performance.

159. Identifying and summarizing strengths and weaknesses in a project with twelve largely independently operating country components, as well as regional and global activities, is inherently difficult. Some findings and conclusions pertain inevitably only to one or few of the countries, and not to others. It is also conceivable that a particular strength in one country is observed as a weakness in another.

Major achievements and strengths

160. Bycatch has not really been on the fisheries agenda of national and local fisheries managers, but with the intervention of this project, the issue has become mainstreamed now. When it was before, i.e. pre-project, largely unwelcome in discussions with concerned government

representatives to link fisheries to the environment, there is now a willingness to recognize and address the issue.

161. On the basis of a wide range of activities, from technical fishing gear experiments to scientific studies, through workshops, meetings and training sessions, through printed and video promotion material, the project has produced outstanding results by generating valuable information, increasing knowledge and awareness, building capacities and fostering international cooperation concerning bycatch reduction.

162. It has strong country ownership and, through the analysis and application of the information generated and recommendations (e.g. on design and use of BRDs), has influenced policy making and drafting of legislation by on this important environmental and fisheries issue. This constitutes significant progress towards reducing bycatch of emblematic species (i.e. sea turtles) and the foundation for tackling the reduction of juvenile fish bycatch.

Weaknesses

163. Constraints pertaining directly to project design, including M&E, shall not be discussed here, as their observed effects on implementation have been discussed extensively above.

164. There had been a technology focus, evidenced through the emphasis on design and testing of BRDs at least in the early phase of the project. As a consequence, equally important key concerns, such as information or knowledge management, legislation and economics received comparatively less attention (though eventually covered to various degrees). This is an unfortunate trade-off situation: increased attention to these topics would probably have meant less technical trials and device recommendations.

165. The technology focus which on the one hand may have been helpful in generating private sector or industry interest, acceptance and active participation, has prevented the project to progress equally far in the other fields to be covered. Further progress in the field of legislation, but also more information on bycatch economics, education and wider awareness could have been achieved, but probably at the expense of less successful or comprehensive outcomes regarding devices design and testing. This type of trade-off should have been avoided.

166. Delay in tackling in particular the issues of regulation and legislation, and addressing the wider resource management concerns, meant that full enactment and implementation or enforcement of new regulations during project life-span remain the exception rather than the rule. The recognition that “change of management” is equally important was clearly present, but apparently not completely translated into action.

167. Useful information, education and promotion materials have been produced, but their actual dissemination and wider application, while clearly progressing on global and regional levels, is largely left to post-project initiatives in-country and on the level of resource users. Some key technical documents are still in draft form after the end of the project; their completion, circulation and application is also largely left to post-project actions.

168. Given some outstandingly positive experience with regional cooperation on bycatch reduction, this level of project operation should have received even more attention, and dedicated funding, to enable not only key technical support, but also educational and regulatory initiatives to be shared more intensively and effectively among regional countries. The very important role of SEAFDEC in Southeast Asia was “undervalued” i.e. underfunded; the support provided by SEAFDEC should have played an even more decisive role than was possible now.

169. Technical and operational guidance in particular during the early implementation phase, but for the provision of technical expertise (not only relating to gear technology) throughout project duration was most likely too limited. The project lacked a Chief Technical Advisor, not included in the design, and dedicated management staff. This was also not budgeted for; not unusual for GEF-funded projects designed during that period. FAO contributions (not budgeted) mitigated the situation and provided these services, leading to satisfactory outcomes. NPCs were operating the project, aside from their respective roles within their government structures and on top of their routine duties and function as technical experts; most likely leading to considerable overload.

6 Lessons Learned and Recommendations

170. For the design of similar projects, or for any follow-up initiatives, it is suggested to take the following lessons learned into account:

- Future bycatch management projects, and any projects dealing with aquatic resources conservation and management, should adopt a holistic, ecosystems-based approach to fisheries and address the technical, economic, regulatory (management), environmental, educational, and public awareness issues at the design stage. This will require sufficient funding for a wider range of activities and inputs, and effective partnerships will need to be formed for efficient project execution.
- In a phased approach, addressing issues sequentially rather than simultaneously, project duration could be too limited to achieve the required outcomes towards the project objectives. It is apparent that technical results, e.g. on gear technology, biology are required to inform the law making process; however, it is nevertheless advisable to start dealing with issues of governance and socio-economics at the earliest possible opportunity.
- Generic approaches to project implementation do not work if the implementation contexts for participating countries are very diverse. The participatory design of country work plans, incorporating national priorities and taking national capacities into account, as practiced in this project, is a correct approach.
- Financial mechanisms and other operational administrative matters, e.g. on how best to formalize arrangements with project implementing partners should receive the same attention as technical concerns. This is especially important during the preparation phase of a project in order to prevent delays in the crucial start-up period. Budget allocations per country should be closely in line with the magnitude of the tasks required in the country.
- Overly ambitious project designs should be avoided, and assumptions (“bycatch reduction is policy priority in participating countries”) critically verified, as these may greatly influence judgement on the achievement level of the project. Making bycatch a policy priority is actually a substantial achievement of this project.
- There were weaknesses in the project’s M&E design, e.g. measurement of baselines, formulation and measurement of SMART indicators. M&E plans for projects require considerable attention. If project partners are not fully familiar with M&E purpose and processes, training input is required, in order it to be routinely and successfully applied. Participatory design of, and agreement on, specific M&E plan components or tools, such as indicators, is also advisable.
- A layered approach in the formation of committees to provide guidance, oversight and technical advice to project implementation is correct. In-country, a careful evaluation should take place to determine whether a pre-existing body should be given the additional

task and function as a national steering committee, or whether this committee should be purposely formed for a project. The latter approach should be standard. In addition, a separate technical advisory body or working group can be beneficial..

Recommendations

171. The project ended in September 2008. In most participating countries there are on-going bycatch reduction related activities, made possible through fairly limited national funding. Draft regulations and legislation are either pending approval or enactment, or, where already existing, need to be complied with and enforced on a continuing basis.

172. The evaluation issues the following recommendation for the immediate post-project phase:

- information produced by the project, and still generated by post-project initiatives, through the participating government institutions, needs further consolidation into formal articles, reports, and documents suitable for circulation to the intended users: policy makers, fisheries managers, and the general public. Dissemination of information should be recognized as an equally important task to producing the material. Information should be processed and presented in line with the needs of different audiences. Countries will have to rely largely on own funding to do this, unless additional donor support can be identified.

173. To enhance the benefits already generated by the evaluated project and make further progress towards the overall objectives, countries and governments should be supported, through FAO and UNEP using their respective facilities in the regions or countries, and in line with their normative roles or comparative advantages in promoting Responsible Fisheries and Environmental Governance, to further push for the deliberation, approval and enactment of pending legislative instruments relating to bycatch management and based on recommendations issued through this project. For some countries, this can entail, under national funding, implementing additional design work on BRDs (e.g. for the artisanal fisheries sector) and additional technical testing, accompanied by all required enabling and supporting work on economics, education and awareness raising.

174. This would require considerable additional resources. Therefore, it is strongly recommended to consider a second phase of the project “Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management” based on the progress made and results produced in the project, and on the recommendation of the 4th International Project Steering Committee (IPSC) Meeting in 2007 in Lagos, Nigeria, as well as the Faeroes Meeting (ICES-FAO WGFTFB) in 2008. It is also recommended to proceed as quickly as possible so that enthusiasm and capacity are not lost. This second phase should consider a more holistic approach combining the gear technology aspects more effectively with management (through implementation of legislation and other forms of regulation), economic and socio-economic considerations, and knowledge management for enhanced dissemination of results and greater awareness. The latter issues are in particular needed to increasingly focus on the concerns of the artisanal sector in the second phase project.

Annexes

Annex 1: Terms of reference of the evaluation

Objective and Scope of the Evaluation

The objective of this terminal evaluation is to examine the extent and magnitude of any project impacts to date and determine the likelihood of future impacts. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results. The evaluation will focus on the following main questions:

1. Did the project countries adopt fishing technologies (including BRDs and others) and practices that are environmentally friendly?
2. Did the project reduce the number of juvenile commercial species, non-target fish and non-fish species caught by shrimp-trawlers?
3. Did the project increase co-operation among countries at the regional and global levels regarding shrimp fisheries?
4. Did the project improve national capacities for sound management of the shrimp-trawler fisheries?

Methods

This terminal evaluation will be conducted as an in-depth evaluation using a participatory approach. The Evaluator will employ a number of methods including structured questionnaires and focus group discussions to involve as many stakeholders as possible. The Evaluator will consult with, and inform the UNEP/DGEF Task Manager, key representatives of the executing agencies (FAO) and other relevant staff throughout the evaluation, and also liaise with the UNEP/EOU, FAO and the UNEP/DGEF Task Manager on any logistic and/or methodological issues pertaining to the evaluation. The draft report will be circulated to UNEP/DGEF Task Manager, key representatives of the executing agencies (FAO) and the UNEP/EOU. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the Evaluator will be advised of any necessary or suggested revisions.

The findings of the evaluation will be based on the following:

5. A desk review of project documents including, but not limited to:
 - (a) The project documents, outputs, monitoring reports (such as progress and financial reports to FAO, UNEP and GEF annual Project Implementation Review reports) and relevant correspondence.
 - (b) Project Country Reports
 - (c) Other project-related material produced by the project staff or partners.
 - (d) Relevant material published on web-sites maintained by FAO and GEF.
6. Interviews with project management and technical support bodies, including: FAO Project Coordinator, National Coordinators, the National and International Steering Committees, the internal Project Task Force.
7. Interviews and Telephone interviews with (intended and actual) users of the project outputs and other stakeholders involved with this project, including in the 12 participating countries. The Evaluator shall determine whether to seek additional information and opinions from

representatives of donor agencies and other organisations. As appropriate, these interviews could be combined with an email questionnaire.

8. Interviews with FAO project coordinator, project operations officer, the UNEP/DGEF project task manager and Fund Management Officer, and other relevant staff in UNEP dealing with International Waters and Biodiversity related activities as necessary. The Evaluator may also contact relevant GEF Secretariat staff if deemed of added value (to gain a broader perspective).
9. Field visits to project staff, and partner and project sites: **Rome, Bangkok, Philippines, Nigeria, Iran and Mexico.**

Key Evaluation principles

In attempting to evaluate any outcomes and impacts that the project may have achieved, evaluators should remember that the project's performance should be assessed by considering the difference between the answers to two simple questions "*what happened?*" and "*what would have happened anyway?*". These questions imply that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition it implies that there should be plausible evidence to **attribute** such outcomes and impacts **to the actions of the project**.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the Evaluator, along with any assumptions that were made to enable the Evaluator to make informed judgements about project performance.

Project Ratings

The success of project implementation will be rated on a scale from 'highly unsatisfactory' to 'highly satisfactory'. In particular the evaluation shall assess and rate the project with respect to the categories defined below:³

A. Attainment of objectives and planned results

The evaluation should assess the extent to which the project's major relevant objectives were effectively and efficiently achieved or are expected to be achieved and their relevance.

- *Effectiveness*: Evaluate how, and to what extent, the stated project objectives have been met, taking into account the "achievement indicators". In particular, the analysis of outcomes achieved should include, *inter alia*, an assessment of the extent to which the project has directly or indirectly assisted policy- and decision-makers to apply information supplied by the project in their national planning and decision-making
- *Relevance*: In retrospect, were the project's outcomes consistent with the focal areas/operational programme strategies? Ascertain the nature and significance of the contribution of the project outcomes to the wider portfolio of the UNEP.
- *Efficiency*: Was the project implementation delayed and if it was, then did that affect cost-effectiveness? Assess the contribution of cash and in-kind co-financing to project implementation and to what extent the project leveraged additional resources. Did the project build on earlier initiatives, did it make effective use of available scientific and/or technical information. Wherever possible, the evaluator should also compare the cost-time vs. outcomes relationship of the project with that of other similar projects.

B. Sustainability

³ However, the views and comments expressed by the evaluator need not be restricted to these items.

Sustainability is understood as the probability of continued long-term project-derived outcomes and impacts after the project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, e.g. stronger institutional capacities or better informed decision-making. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes. The evaluation should ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time.

Four aspects of sustainability should be addressed: financial, socio-political, institutional frameworks and governance, and ecological. The following questions provide guidance on the assessment of these aspects:

- *Financial resources.* What is the likelihood that financial and economic resources will be available such as the project outcomes/benefits will be sustained once the UNEP assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and market trends that support the project's objectives)? Was the project successful in identifying and leveraging co-financing?
- *Socio-political:* What is the likelihood that the level of stakeholder ownership will allow for the project outcomes/benefits to be sustained? Is there sufficient public/stakeholder awareness in support of the long term objectives of the project?
- *Institutional framework and governance.* What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for the project outcomes/benefits to be sustained? While responding to these questions consider if the required systems for accountability and transparency and the required technical know how are in place.
- *Ecological.* What is the likelihood that project achievements will lead to sustained ecological benefits?

C. Achievement of outputs and activities

- Delivered outputs: Assessment of the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
- Assess to what extent the project outputs produced have the credibility, necessary to influence policy and decision-makers, particularly at the national level.

D. Monitoring and evaluation

The evaluation shall include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The Terminal Evaluation will assess whether the project met the minimum requirements for 'project design of M&E' and 'the application of the Project M&E plan' (see minimum requirements 1&2 in Annex 4). GEF projects must budget adequately for execution of the M&E plan, and provide adequate resources during implementation of the M&E plan. Project managers are also expected to use the information generated by the M&E system during project implementation to adapt and improve the project.

M&E during project implementation

- *M&E design.* Projects should have sound M&E plans to monitor results and track progress towards achieving project objectives. An M&E plan should include a baseline (including data, methodology, etc.), SMART indicators (see Annex 4) and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified.
- *M&E plan implementation.* A Terminal Evaluation should verify that: an M&E system was in place and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period. Verify if reports were complete, accurate and with well justified ratings; that the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs; and that projects had an M&E system in place with proper training for parties responsible for M&E activities.
- *Budgeting and Funding for M&E activities.* The terminal evaluation should determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

E. Catalytic Role/ Replication

What examples are there of replication and catalytic outcomes that suggest increased likelihood of sustainability? Replication approach, in the context of UNEP projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). A catalytic role refers to the ability of a project to trigger similar activities.

F. Preparation and Readiness

This section assesses the quality of the project design and the preparations for the commencement of the project. When the project was designed were:

the project's objectives and components clear, practicable and feasible within its timeframe; the capacities of executing institution and counterparts properly considered; project beneficiaries appropriately selected; and lessons from other relevant projects properly incorporated? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were the counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place?

G. Country ownership/driveness:

This is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements. The evaluation will:

- Assess the level of country ownership. Specifically, the evaluator should assess whether the project was effective in providing and communicating information that catalyzed action in participating countries to improve decisions relating to the management of Shrimp trawling in each country.
- Assess the level of country commitment to address the environmental issues related to Shrimp trawling.

H. Stakeholder participation / public awareness

This consists of three related and often overlapping processes: information dissemination, consultation, and “stakeholder” participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the UNEP financed project. The term also applies to those potentially adversely affected by a project. The evaluation will specifically:

- Assess the mechanisms put in place by the project for identification and engagement of stakeholders in each participating country and establish, in consultation with the stakeholders, whether this mechanism was successful, and identify its strengths and weaknesses.
- Assess the degree and effectiveness of collaboration/interactions between the various project partners and institutions during the course of implementation of the project.
- Assess the degree and effectiveness of various public awareness activities that were undertaken during the course of implementation of the project.

I. Financial Planning

Activities in this area foresee an assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project’s lifetime. As this present evaluation is conducted by an Evaluator with a technical (fisheries) background, what is primarily required here is the Evaluator’s perspective on how the financial planning contributed to the achievement of the project objectives; audit and accounting issues will receive less attention. An assessment of financial planning includes the comparison of actual project costs by activities to the budget (variances), and an appraisal of financial management (including disbursement issues), and co- financing. The evaluation should, to the extent possible:

- Assess the strength and utility of financial controls, including reporting, and planning to allow the project management to make informed decisions regarding the budget and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables.
- Present the major findings from the financial audit if one has been conducted.
- Identify and verify the sources of co-financing as well as leveraged and associated financing (in co-operation with the IA and EA).
- Assess whether the project has applied appropriate standards of due diligence in the management of funds and financial audits.
- The evaluation should also include a breakdown of final actual costs and co-financing for the project prepared in consultation with the relevant UNON/DGEF Fund Management Officer of the project. (see Annex 2)

J. Implementation approach

This includes an analysis of the project’s management framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management. The evaluation will:

- Ascertain to what extent the project implementation mechanisms outlined in the project document have been closely followed. In particular, assess the role of the various committees established and whether the project document was clear and realistic to enable effective and efficient implementation, whether the project was executed according to the plan and how well the management was able to adapt to changes during the life of the project to enable the implementation of the project.
- Evaluate the effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution

arrangements at all levels (1) policy decisions: Steering Group; (2) day-to-day project management in each of the country executing agencies and FAO.

- Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project.
- Assess whether the logical framework was used during implementation as a management tool and whether feedback from M&E activities more broadly was used for adaptive management.

K. UNEP and FAO Supervision and Backstopping

- Assess the effectiveness of supervision and administrative and financial support provided by UNEP/DGEF, and of technical/operational support provided by FAO.
- Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project.

L. Cost-effectiveness

Cost-effectiveness assesses the achievement of the environmental and developmental objectives as well as the project's outputs in relation to the inputs, costs, and implementing time. It also examines the project's compliance with the application of the incremental cost concept. The evaluation will:

- *Efficiency*: Include an assessment of *outcomes* in relation to inputs, costs, and implementation times based on the following questions: Was the project cost-effective? How does the cost-time vs. outcomes compare to other similar projects? Was the project implementation delayed?
- Assess the contribution of cash and in-kind co-financing to project implementation and to what extent the project leveraged additional resources.
- Determine the extent to which scientific and technical information and knowledge have been incorporated within, and have influenced the execution of the project activities.

M. Impact

- As far as possible, also assess the potential longer-term impacts considering that the evaluation is taking place upon completion of the project and that longer term impact is expected to be seen in a few years time. Frame recommendations to enhance future project impact in this context. Which will be the major 'channels' for longer term impact from the project at the national and international scales? The evaluation should formulate recommendations that outline possible approaches and necessary actions to facilitate an impact assessment study in a few years time.

The ratings will be presented in the form of a table. Each of the eleven categories should be rated separately with brief justifications based on the findings of the main analysis. An overall rating for the project should also be given. The following rating system is to be applied:

HS	= Highly Satisfactory
S	= Satisfactory
MS	= Moderately Satisfactory
MU	= Moderately Unsatisfactory
U	= Unsatisfactory
HU	= Highly Unsatisfactory

Evaluation report format and review procedures

The report should be brief, to the point and easy to understand. It must explain; the purpose of the evaluation, exactly what was evaluated and the methods used. The report must highlight any

methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should be presented in a way that makes the information accessible and comprehensible and include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

The evaluation will rate the overall implementation success of the project and provide individual ratings of the eleven implementation aspects as described in Section 1 of this TOR. The ratings will be presented in the format of a table with brief justifications based on the findings of the main analysis.

Evidence, findings, conclusions and recommendations should be presented in a complete and balanced manner. Any dissident views in response to evaluation findings will be appended in an annex. The evaluation report shall be written in English, be of no more than 50 pages (excluding annexes), use numbered paragraphs and include:

- i) An **executive summary** (no more than 3 pages) providing a brief overview of the main conclusions and recommendations of the evaluation;
- ii) **Introduction and background** giving a brief overview of the evaluated project, for example, the objective and status of activities; The GEF Monitoring and Evaluation Policy, 2006, requires that a TE report will provide summary information on when the evaluation took place; places visited; who was involved; the key questions; and, the methodology.
- iii) **Scope, objective and methods** presenting the evaluation's purpose, the evaluation criteria used and questions to be addressed;
- iv) **Project Performance and Impact** providing *factual evidence* relevant to the questions asked by the evaluator and interpretations of such evidence. This is the main substantive section of the report. The evaluator should provide a commentary and analysis on all eleven evaluation aspects (A – K above).
- v) **Conclusions and rating** of project implementation success giving the evaluator's concluding assessments and ratings of the project against given evaluation criteria and standards of performance. The conclusions should provide answers to questions about whether the project is considered good or bad, and whether the results are considered positive or negative. The ratings should be provided with a brief narrative comment in a table (see Annex 1);
- vi) **Lessons (to be) learned** presenting general conclusions from the standpoint of the design and implementation of the project, based on good practices and successes or problems and mistakes. Lessons should have the potential for wider application and use. All lessons should 'stand alone' and should:
 - Briefly describe the context from which they are derived
 - State or imply some prescriptive action;
 - Specify the contexts in which they may be applied (if possible, who when and where)
- vii) **Recommendations** suggesting *actionable* proposals for improvement of the current project. In general, Terminal Evaluations are likely to have very few (perhaps two or three) actionable recommendations.

Prior to each recommendation, the issue(s) or problem(s) to be addressed by the recommendation should be clearly stated.

A high quality recommendation is an actionable proposal that is:

1. Feasible to implement within the timeframe and resources available
2. Commensurate with the available capacities of project team and partners
3. Specific in terms of who would do what and when

4. Contains results-based language (i.e. a measurable performance target)
5. Includes a trade-off analysis, when its implementation may require utilizing significant resources that would otherwise be used for other project purposes.

viii) **Annexes** may include additional material deemed relevant by the evaluator but must include:

1. The Evaluation Terms of Reference;
2. A list of interviewees, people or groups met (eg in group discussions), questionnaire recipients;
3. An evaluation timeline and itinerary;
4. A list of documents reviewed / consulted;
5. Summary co-finance information and a statement of project expenditure by activity;
6. The expertise of the Evaluator.

TE reports will also include any response / comments from the project management team and/or the country focal point regarding the evaluation findings or conclusions as an annex to the report, however, such will be appended to the report by UNEP EOU.

Examples of UNEP GEF Terminal Evaluation Reports are available at www.unep.org/eou

Review of the Draft Evaluation Report

This is a joint UNEP/FAO evaluation, therefore the draft report will be submitted to FAO PBEE and UNEP EOU and shared with the corresponding Programme or Project Officer / Coordinators and his or her supervisor for initial review and consultation. The DGEF staff and senior Executing Agency staff comment on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation will in particular seek feedback on the proposed recommendations. UNEP EOU will collate all review comments and provide them to the Evaluator for consideration in preparing the final version of the report.

Submission of Final Terminal Evaluation Reports

The final report shall be submitted in electronic form in MS Word format and should be sent to the following persons:

Segbedzi Norgbey, Chief,
UNEP Evaluation and Oversight Unit
P.O. Box 30552-00100
Nairobi, Kenya
Tel.: (254-20) 7623387
Fax: (254-20) 7623158
Email: segbedzi.norgbey@unep.org

FAO Officer-in-Charge
Evaluation Service (PBEE)

With a copy to:

Ms. Maryam Niamir-Fuller
Director, UNEP/Division of GEF Coordination
P.O. Box 30552
Nairobi, Kenya
Tel: + 254-20-7624165

Fax: + 254-20-7624041/4042
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The final evaluation report will be printed in hard copy and published on the Evaluation and Oversight Unit's web-site www.unep.org/eou as well as FAO's Evaluation website (<http://www.fao.org/pbe/pbee/en/docrep/index.html>).

Resources and schedule of the evaluation

This final evaluation will be undertaken by an international evaluator contracted by the Evaluation and Oversight Unit, UNEP for a period of **eleven weeks**. The contract for the Evaluator will begin on **1st December 2008 and end on 31st March 2009 (11 weeks spread over 4 months)**. The evaluator will submit a draft report on 7th March 2009 to FAO PBEE and UNEP/EOU, the UNEP/GEF Project Manager, the FAO Project Coordinator and key representatives of the executing agencies. Any comments or responses to the draft report will be sent to FAO PBEE and UNEP/EOU for collation and the Evaluator will be advised of any necessary revisions. Comments to the final draft report will be sent to the Evaluator by 21 March 2009 after which, the Evaluator will submit the final report no later than 31st March 2009.

The Evaluator will after an initial telephone briefing with FAO PBEE, EOU and UNEP/GEF travel to Rome to meet with project staff at the beginning of the evaluation.

In accordance with UNEP policy, all UNEP projects are evaluated by independent evaluators contracted as consultants by the EOU. The Evaluator should have the following qualifications:

The evaluator should not have been associated with the design and implementation of the project. The Evaluator will work under the overall supervision of the Chief, Evaluation and Oversight Unit, UNEP. The Evaluator should be an international expert in fishing gear, marine biology and have experience with project evaluation. Knowledge of UNEP programmes and GEF activities is desirable. Fluency in oral and written English is required

Schedule Of Payment

Lump-Sum Option

The evaluator will receive an initial payment of 30% of the total amount due upon signature of the contract. A further 30% will be paid upon submission of the draft report. A final payment of 40% will be made upon satisfactory completion of work. The fee is payable under the individual Special Service Agreement (SSA) of the evaluator and **is inclusive** of all expenses such as travel, accommodation and incidental expenses.

In case, the evaluator cannot provide the products in accordance with the TOR, the timeframe agreed, or his products are substandard, the payment to the evaluator could be withheld, until such a time the products are modified to meet UNEP's standard. In case the evaluator fails to submit a satisfactory final product to UNEP, the product prepared by the evaluator may not constitute the evaluation report.

Annex 2: List of interviewees, people met, questionnaire recipients

Takehiro Nakamura, UNEP (by telephone)
Virginie Hart, UNEP (by telephone)
Bernd Bultemeier, PBEE, FAO
Jeremy Turner, FIIT, FAO
Francis Chopin, FIIT, FAO
Janne Fogelgren, FIIT, FAO
Barbara Cooney, TCID, FAO
Blaise Kuemlangan, LEGN, FAO
Simon Funge-Smith, FAO-RAP Bangkok
Miao Weimin, FAO-RAP Bangkok
Wilfried Thiele, FAO (retired) (by telephone)

SEAFDEC, Thailand:

Siri Ekmaharaj, Secretary General and Chief, Training Department
Bundit Chokesanguan, Head, Information and Extension Division
Sei Etoh, Project Leader, Coastal Resources Management Projects
Panitnard Taladon, Head, Training and Extension Section
Suppachai Anapongsuk, Researcher, Fishery Biology
Sonthikan Soetpanuk, Administrator, Internet Systems
Kongpathay Saraphaivanich, Head, Information and Communication Technology

Philippines:

Mel Senen S. Sarmiento, Mayor, Calbayog City
Angelica T. Teauno, Senior Agriculturist, Calbayog City
Marcos A. Sabido, Agriculture Technologist, Calbayog City
Adela C. Ocenar, City Agriculturist, Calbayog City
Rodolfo Merancillo, Fishing Boat Operator, Calbayog City
Apolinario Catarman, Fishing Boat Operator, Calbayog City
Dionisio A. Baliu, Chairman, Coastal/Fisheries Resources Management Council, Calbayog City
John P. Meniano, Office of the Provincial Agriculturist, Catbalogan City, Samar
Latip Abdurahman, Dean, Samar State University, Mercedes Campus, Catbalogan City
Renato C. Diocton, Assist. Professor, Samar State University, Mercedes Campus, Catbalogan City
Rafael V. Ramiscal, Senior Aquaculturist, BFAR
Norberto T. Berida, Director, Regional Fisheries Training Center, BFAR Region 8
Myrna B. Ramos, Technical Staff, BFAR
Efren Hilario, Aquaculturist, BFAR
Napoleon S. Lamarca, Aquaculturist, BFAR
Franciso N. Cuzon, Fishing Boat Master, Catbalogan City
Rodolfo S. Ibanez, President, Fishing Boat Operators' Association, Catbalogan City
Kzun Il Lee, Volunteer, Korean International Cooperation Agency, Catbalogan City
Carlos A. Castello, Station Chief, Maritime Police, Calbayog City
Rogelio R. Vilon, Operations Officer, Maritime Police, Calbayog City
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Annex 3: Evaluation time line and itinerary

Date / period	Location	Activity
15 – 27 Dec. 2008	Germany	Desk review of documents, preparation of guide questions, arrangement of travel schedules, flight reservations and ticket purchases
28 – 30 Dec. 2008	Rome, Italy	Desk review of documents, FAO REBYC website
05 – 06 Jan. 2009	Germany	Visa and travel arrangements
07 Jan. 2009	Germany	Departure for Bangkok; train and air travel
08 Jan. 2009	Bangkok, Thailand	Arrival
09 Jan. 2009	Bangkok	Meetings at Southeast Asian Fisheries Development Center (SEAFDEC) and FAO Regional Office (RAP)
10 Jan. 2009	Bangkok - Manila	Travel
11 Jan. 2009	Manila, Philippines	Field travel preparations
12 Jan. 2009	Calbayog City, Samar	Meetings with Fisheries Administration (BFAR), City Fisheries Authority, and Fishers
13 Jan. 2009	Catbalogan City and Calbayog City, Samar	Meetings at Regional Fisheries Training Center and Samar State University with Staff, Fishers, and Maritime Police, and Calbayog City Mayor
14 Jan. 2009	Calbayog – Catbalogan – Tacloban	Land travel, Meeting with Regional Fisheries Authorities (BFAR Reg. 8)
15 Jan. 2009	Tacloban - Manila	Air travel Meeting with USAID Project FISH Senior Fisheries Advisor
16 Jan. 2009	Manila	Meetings at FAO Representation Office, BFAR Central Office, National Fisheries Research and Development Institute, and with Worldwide Fund for Nature (WWF) Fisheries Advisor
17 Jan. 2009	Manila - Bangkok	Air travel
18 Jan. 2009	Bangkok - Germany	Air and train travel, arrival home base
19 – 23 Jan. 2009	Germany	Consolidation of information, visa and travel arrangements
24 Jan. 2009	Hoexter – Mexico City	Train and air travel
25 Jan. 2009	Mexico City	Preparation of meetings and field travel
26 Jan. 2009	Mexico City	Meetings at National Fisheries Research Institute (INAPESCA) and WWF
27 Jan. 2009	Mexico City – Hermosillo - Guaymas	Air and road travel Meetings with Stakeholders (Fisheries Authorities and Artisanal / Industrial Fishers), Visits to fishing port and net manufacturer
28 Jan. 2009	Guaymas	Continuation of Stakeholder Meetings, Start of experimental fishing trials in Gulf of California
29 Jan. 2009	Guaymas - Hermosillo	Continuation of fishing trials, meetings with fishers and NGO representatives, land travel
30 Jan. 2009	Hermosillo – Mexico City	Air travel, Consultation with Director INAPESCA
31 Jan. 2009	Mexico City - Germany	Consolidation of information, Air and train travel
01 Feb. 2009	Germany	Arrival home base
02 – 05 Feb. 2009	Germany	Consolidation of information, visa and travel arrangement
06 Feb. 2009	Germany - Istanbul	Train and air travel, stranded due to flight delay
07 Feb. 2009	Istanbul – Teheran	Air travel
08 Feb. 2009	Teheran, I.R. Iran	Arrival, Meetings at FAO Representation Office, Iran Fisheries Organisation, Iran Fisheries Research Organisation, and with Rural Development Institute of Iran.

	Teheran – Bandar Abbas	Air Travel
09 Feb. 2009	Bandar Abbas	Meetings at Hormuzgan Fisheries, visits to fishing port and fish market
10 Feb. 2009	Bandar Abbas - Teheran	Air travel (National Holiday), consolidation of information
11 Feb. 2009	Teheran	National Steering Committee Meeting (Iran Fisheries Organisation)
12 Feb. 2009	Teheran	Debriefing meeting at FAO Representation Office
13 Feb. 2009	Teheran - Germany	Air and train travel, arrival at home base
16 – 20 Feb. 2009	Rome, Italy	Consolidation of information, interviews, preparation of questionnaires
24 Feb. 2009	Berlin, Germany	Visit to Nigerian Embassy for visa application
25 Feb. – 10 March 2009	Germany	Consolidation of information, analysis of questionnaires, report drafting
11 – 31 March 2009	Rome, Italy	Analysis of questionnaires, report drafting

Annex 4: List of documents reviewed / consulted

General

UNEP Project Document Reduction of Environmental Impact from Tropical Shrimp Trawling, through the Introduction of Bycatch Reduction Technologies and Change of Management. GF/2731-02-4469. 2002. 63p

Mid-Term Review of the Project Reduction of Environmental Impact from Tropical Shrimp Trawling, through the Introduction of Bycatch Reduction Technologies and Change of Management. Lena Westlund. 2006. 67p

Global Study of Shrimp Fisheries. Gillet, R. 2008. FAO Fish. Tech. Paper 475. 331p

A guide to Bycatch Reduction in Tropical Shrimp Trawl Fisheries. Eayrs, S. 2005. 110p. (translated into French, Spanish, Arabic, Indonesian, and Farsi)

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Four GEF/UNEP/FAO Regional Workshops on Reducing the Impact of Tropical Shrimp Trawl Fisheries. FAO 2000. FAO Fish. Rep. 627. 40p.

Report of the ICES-FAO Working Group on Fish Technology and Fish Behaviour (WGFTFB). 2008. Torshavn, Faroe Islands. ICES CM 2008/FTC:02. 265p.

A policy proposal to reduce unwanted bycatches and eliminate discards in European fisheries. European Commission. 2007 (COM (2007) 136)

Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments. UN GA A/RES/63/112. 2009.24p.

several Country Project Progress Reports

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Monitoring and Evaluation Indicators for GEF International Waters Projects. Alfred Duda. 2002. Monitoring and Evaluation Working Paper 10. 11p

Southeast Asia

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The promotion of responsible trawl fishing practices in Southeast Asia through the introduction of juvenile and trash excluder devices (JTEDs). Bundit Chokesanguan. 2007 SEAFDEC. Regional Workshop on Low Value and “Trash Fish” in the Asia-Pacific Region. Hanoi 2005. pp 161-173

Regional Workshop on the Reduction of the Impacts of Fishing Gear on Coastal and Marine Environment in the Southeast Asian Water. SEAFDEC 2009

Training Course on Responsible Fishing Technology. SEAFDEC 2008

Study on Juvenile and Trash Excluder Device (JTED) in the Philippines. SEAFDEC. 2004. 18p

Study on Juvenile and Trash Excluder Device (JTED) in Indonesia. SEAFDEC. 2004. 12p

Reviewing and Enhancing Bycatch Reduction in Indonesia Through Regulation: Management and Legal Instrument for Trawl Fisheries. Daniel Monintja, Luky Adrianto, Melda K. Ariadno, M. Fedi A. Sondita, Indriati Kusumawarshani, and Erina Nelly. 2008. Workshop Report. Jakarta

General Progress Achievement of Bycatch Reduction Devices (BRDs) and Change of Management for Trawl Fisheries in Indonesia. Ministry of Marine Affairs and Fisheries. 2008. Workshop Report. Jakarta

Draft Presidential Regulation Republic Indonesia on Trawl Fishery Management. 2007. 8p

Consultation Process on the Proposed Fisheries Administrative Order on the Regulation on the Use of Juvenile and Trashfish Excluder Device (JTED) in Trawl Fishing in the Philippines (January 2009)

JTED Pilot Project Implementation Plan Philippines. 2005.

Juvenile and Trashfish Excluder Device (JTED) Pilot Project in Samar Sea. Jonathan O. Dickson, Angelica T. Realino, Norberto T. Berida, Rafael V. Ramiscal, Napoleon J. Lamarca, Efren V. Hilario, Ronnie O. Romero, Elmer B. Alba, and Myrna B. Ramos. 2009. BFAR.

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Study on the Socio-Economic Importance of Bycatch in the Demersal Trawl Fishery for shrimp in Trinidad and Tobago. Sharon D. Hutchinson, Govind Seepersad, Ranjit Singh, and Lloyd Rankine. 2007. University of the West Indies.

Iran

Shrimp Trawling Bycatch Reduction Project. A brief report on BRDs application in shrimp trawlers.

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Effects of different BRDs in shrimp trawling in the Persian Gulf. Pighambari et al. 2003. Iranian Scientific Fisheries Journal 12.

Nigeria

Meeting on the Harmonization of laws in the Gulf of Guinea States. 2007. Lagos, Nigeria.

Annex 5: Summary co-finance information, statement of project expenditure by activity

Co financing (Type/Source)	FAO Financing (mill US\$)		Government (mill US\$)		Private Sector (mill US\$)		Total (mill US\$)		Total Disbursement (mill US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
- Grants	0	510,000**	0	1,629,085	0	485,125				
- Loans/ Concessional										
- Credits										
- Equity investments										
- In-kind support	1,010,000	1,138,000* **	1,445,000	2,774,341	1,805,000	992,016				
- Other (*)										
Totals		1,648,000		4,403,426		1,477,141				

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

** 100% of P4 for 34 months @ \$15,000 of extra-budgetary funds.

*** 25% of one P4 for 54 months @ \$15,000, 50% of one P5 for 72 months @ \$18,000, 50% of one G4 for 72 months @ \$8,000.

Unrecorded FAO Project Task Force: meetings and consultations.

Leveraged Resources

Leveraged resources are additional resources — beyond those committed to the project itself at the time of approval — that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

Annex 6: Actual project co-financing by country

REBYC								
Co-financing (US\$)	Government		Industry		Grand Total	Planned	Countries	
	Cash	In kind	Cash	In kind			Total Cash	Total In kind
Cameroon	3,100	37,502	14,540	8,700	63,842	50,000	Total Cash	2,114,210
Colombia	159,544	141,391	113,487	11,505	425,927	100,000	Total In kind	3,766,357
Costa Rica	0	77,355	0	143,995	221,350	200,000	Total	5,880,567
Cuba	296,523	0	0	0	296,523	50,000		
Indonesia	20,200	186,760	17,898	37,320	262,178	300,000	Total Government	4,403,426
Iran	309,000	203,000	147,000	260,000	919,000	300,000	Total Industry	1,477,141
Mexico	0	1,345,945	0	182,904	1,528,849	850,000	Total	5,880,567
Nigeria	385,150	29,500	166,500	154,000	735,150	300,000		
Philippines	124,042	228,726	25,700	20,250	398,718	200,000		
SEAFDEC	27,977	185,520			213,497	150,000		
Trinidad	256,907	0	0	17,730	274,637	100,000		
Venezuela	46,642	338,642	0	155,612	540,896	550,000		
Total countries	1,629,085	2,774,341	485,125	992,016	5,880,567	3,150,000		
FAO	510,000	1,138,000			1,648,000			
Grand Total	2,139,085	3,912,341	485,125	992,016	7,528,567			

Annex 7: Expertise of the evaluator

The evaluator has more than 30 years experience in the field of marine and coastal fisheries research, development and management, gained mostly through technical cooperation work assignments in developing countries of Asia and the Pacific (Philippines, Indonesia, Papua New Guinea, and Sri Lanka). Predating his period of employment, he already participated as student assistant in cruises of research vessels implementing trawl fisheries and biological oceanography research in the North Sea and off Greenland and Labrador.

His experience in technical cooperation in the fisheries sector covers a wide range of project types and duty stations, including research and teaching at a university (University of the Philippines), in the fields of fisheries and biological oceanography and providing graduate thesis advice; institutional strengthening and capacity building of fisheries administration offices (Indonesia and Papua New Guinea), through support to fisheries development and data management; as well as providing his expertise to science and technology management on marine resources research and development, by planning, coordinating, monitoring and evaluating related projects (Philippines). Concept development and actual implementation of aquatic resources management and habitat conservation and rehabilitation projects (marine protected areas, coral reefs, mangroves) was also undertaken for a national non-government organisation (NGO, Philippines). The Evaluator received training and has multiyear experience in applying Project Cycle Management and Goal Oriented Project Planning (GOPP) in development projects.

More recently, the Evaluator was the fisheries member of the Realtime Evaluation of FAO post-tsunami activities, followed by an active role in coordination, supervision and implementation of post-tsunami relief, reconstruction and rehabilitation projects (Aceh, Indonesia); including provision of technical and policy advisory services both in the field and in FAO Rome headquarters.

Annex 8: List of acronyms and abbreviations

BBC	British Broadcasting Corporation
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
BRD	Bycatch reduction device
CCRF	Code of Conduct for Responsible Fisheries
COFI	Committee on Fisheries
CRFM	Caribbean Regional Fisheries Mechanism
DGEF	Division of GEF Coordination (of UNEP)
DVD	Digital Video Disk
EOU	Evaluation and Oversight Unit (of UNEP)
FAO	Food and Agriculture Organization of the United Nations
FIIT	Fishing Technology Service (of FAO)
GEF	Global Environment Facility
ICES	International Council for the Exploration of the Sea
IFO	Iranian Fisheries Organisation (Shilat), Iran
INAPESCA	Instituto Nacional de Pesca (Mexico)
IPSC	International Project Steering Committee
JTED	Juvenile and Turtle Excluder Device
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MCS	Monitoring, Control and Surveillance
NGO	Non-Governmental Organization
NOM	Norma Oficial Mexicana (Mexican Law)
NPC	National Project Coordinator
NPSC	National Project Steering Committee
OP	Operational Programme (of UNEP)
PBEE	Evaluation Service (of FAO)
PIR	Project Implementation Review
RAP	Regional Office Asia Pacific (of FAO)
RECOFI	Regional Commission for Fisheries (in the Gulf sub-region)
SEAFDEC	Southeast Asian Fisheries Development Center
TED	Turtle Excluder Device
ToR	Terms of Reference
ToT	Training of Trainers
TVE	Television Trust for the Environment
TWG	Technical Working Group
UN	United Nations
UNEP	United Nations Environment Programme
WECAFC	Western Central Atlantic Fisheries Commission
WGFTFB	Working Group on Fish Technology and Fish Behaviour
WSSD	World Summit on Sustainable Development
WWF	Worldwide Fund for Nature
ZOPP	Goal Oriented Project Planning