



## DEVELOPING FISH LANDING CENTRES: EXPERIENCES AND LESSONS FROM SRI LANKA



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## **DEVELOPING FISH LANDING CENTRES: EXPERIENCES AND LESSONS FROM SRI LANKA**

by

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Restoration and Improvement of Fish Landing Centres with Stakeholder Participation  
in Management Project  
Bishop's Stortford, Hertfordshire, UK

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## PREPARATION OF THIS DOCUMENT

This Fisheries and Aquaculture Circular traces the experiences of the Restoration and Improvement of Fish Landing Centres with Stakeholder Participation in Management Project (I-FLCP). The project was a partnership between FAO, the Canadian International Development Agency and the Ministry of Fisheries and Aquatic Resources Development. It was implemented from August 2008 until the end of September 2011. The paper documents different aspects of the project work and was prepared by the project's former Chief Technical Adviser with collaborative support from a number of former I-FLCP staff and consultants.

The draft of this paper was reviewed by: Raymon van Anrooy, Fisheries and Aquaculture Officer of the FAO Subregional Office for the Caribbean; Daniela Kalikoski, Fishery Industry Officer of the Fishing Operations and Technology Service; B.N. Krishnamurthy, Independent Consultant, Bangalore, India; Sirra Njai, Programme Officer of the FAO Representation in the Gambia; John Ryder, Fishery Industry Officer of the Trade, Products and Marketing Service; J.A. Sciortino, independent consultant, St. Paul's Bay, Malta; and Venkatesan Venugopal, independent Consultant, Chennai, India.

The following are the credits for the cover photographs: Ampara outrigger landing through surf by Simon Diffey (top left); Mannar FLC fish market by Kusal Dharmarathne (top right); Valachchenai FLC opening by the Ministry of Fisheries and Aquatic Resources Development (bottom left); and Hambantota FLC by Lalith Wijeratne (bottom right).

This publication contributes to the achievement of the following organizational result: the operation of fisheries, including the use of vessels and fishing gear, is made safer, more technically and socio-economically efficient, environmentally friendly and compliant with rules at all levels.

This Circular is accompanied by a CD-ROM containing the following: (1) Questionnaire for profiling fish landing centres; (2) Memorandum of understanding for the management of a fish landing centre; (3) Operations and maintenance manual; (4) Drawings database of fish landing centres; (5) Introductory manual on the sustainable livelihoods approach; (6) Training needs assessment questionnaire; (7) Sample fish landing centre business plan; and (8) monitoring and evaluation master tables.

**Diffey, S. 2012.**

*Developing fish landing centres: Experiences and lessons from Sri Lanka.*  
FAO Fisheries and Aquaculture Circular No. 1063. Rome, FAO. 88 pp.

## ABSTRACT

A significant amount of coastal infrastructure was damaged or destroyed by the December 2004 Indian Ocean tsunami, and the livelihoods of many fisher families were adversely affected. While the reconstruction of the larger harbours and anchorages received priority from the donor community post-tsunami, the rehabilitation of the many landing centres developed at a slower pace.

Post-tsunami, FAO assisted with the preparation of a master plan for fisheries infrastructure rehabilitation and development. As part of this plan, a project was identified to support the longer-term objective of reconstructing and developing the inshore marine fisheries sector. This paper traces the experiences of this project – Restoration and Improvement of Fish Landing Centres with Stakeholder Participation in Management – the goal of which was to improve the livelihoods of fishers and fishing communities in tsunami-affected areas in Sri Lanka. This goal was broadened midway through the project to include postconflict areas in the north of the country following the end of the civil war in Sri Lanka in mid-2009.

This paper documents the experiences and lessons generated by the project, which it is hoped will serve as a source of information and inspiration for further work in the sustainable development of small-scale fishing communities and fish landing centres elsewhere. Attention focuses on the involvement of stakeholders, the practical aspects of the initial profiling and selection process for landing site development, and the importance of capacity development in ensuring sustainability of the project outcome. The methodology of the project with regard to infrastructure development, in particular the planning steps and procedures, the importance of the business planning process and training delivery, is discussed and the role of village-based institutions explored. The paper also provides an opportunity to present the comprehensive monitoring and evaluation process used by the project and introduces the use of a geographic information system as a management tool for the strategic planning of landing site development. The paper concludes with the lessons to be learned and a simple cost-benefit analysis of the infrastructure investment undertaken by the project.

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- Mr Kusal Dharmarathne – monitoring and evaluation (M&E) and information technology officer;
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- Chapter 4 – Cattermoul, Townsley and Campbell (2010) prepared a manual and workshop reports that provide much of the basis for the section on the sustainable livelihoods approach.
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- Chapter 5 – Details concerning the development and use of the Google Earth database are directly attributable to a paper prepared by Mr Kusal Dharmaratne (2010).
- Chapter 5 – Technical details concerning the establishment of the Shoreline and Near Shoreline Data System (SANDS) database were extracted from various data and mission reports prepared by Mr Michael Stickley, SANDS Project Manager from Halcrow Group Ltd.

## ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
ADF	Assistant Director of Fisheries
BFC	boat-fisher-catch (units)
BOQ	bill of quantities
CBO	community-based organization
CCD	Coast Conservation Department
CFHC	Ceylon Fishery Harbours Corporation
CIDA	Canadian International Development Agency
Code	Code of Conduct for Responsible Fisheries
CTA	Chief Technical Adviser
DFAR	Department of Fisheries and Aquatic Resources
D&S	design and supervision
EIA	environmental impact assessment
EIS	environmental impact statement
FCCISL	Federation of Chambers of Commerce and Industry of Sri Lanka
FCS	fisheries cooperative society
FI	Fisheries Inspector
FLC	fish landing centre
FRMA	fisheries resource management assistant
FRP	fibreglass reinforced plastic
FSC	fisheries service centre
FTCE	firm (final) total cost estimate
GIS	geographic information system
GMP	good management practice
GPS	Global Positioning System
GSFPC	General Santos Fish Port Complex (in the Philippines)
HRD	human resource development
ICEIDA	Icelandic International Development Agency
ICTAD	Institute for Construction Training and Development
IDP	internally displaced person
IFAD	International Fund for Agricultural Development
I-FLCP	Improvement of Fish Landing Centre Project (an abbreviation of the full project title)
LFA	logical framework analysis
LHI	Lanka Hydraulic Institute
LKR	Sri Lankan rupee
LTTE	Liberation Tigers of Tamil Eelam
MDG	Millennium Development Goal
MFARD	Ministry of Fisheries and Aquatic Resources Development (formerly MFAR)
MIS	management information system
MOU	memorandum of understanding
M&E	monitoring and evaluation
NARA	National Aquatic Resources Research and Development Agency
NGO	non-governmental organization
NIFNE	National Institute of Fisheries and Nautical Engineering
O&M	operation and maintenance
PIU	Project Implementation Unit (of the CFHC)
PMU	project management unit
PRA	participatory rural appraisal
RFO	rural fisheries organization
SANDS	Shoreline and Near Shoreline Data System
SFP	Strengthening Fishery Products Health Conditions Programme (of the European Union)
SLA	sustainable livelihoods approach

SLED	sustainable livelihoods enhancement and diversification
SLIDA	Sri Lanka Institute of Development Administration
SME	small–medium enterprise
SOP	standard operating procedure
SSOP	sanitation standard operating procedure
TCE	total cost estimate
TNA	training needs assessment
TOT	training of trainers
UN	United Nations
UNOPS	United Nations Office for Project Services

### **Currency equivalents**

Currency units used are the Sri Lankan rupee, LKR, and United States dollar, USD.

The official UN operational rate of exchange in May 2009 was USD1.00 = LKR119.

The official UN operational rate of exchange in August 2011 was USD1.00 = LKR109.

## **EXECUTIVE SUMMARY**

The goal of the project, the Restoration and Improvement of Fish Landing Centres with Stakeholder Participation in Management Project (I-FLCP), was to improve the livelihoods of fishers and fishing communities in tsunami-affected areas in Sri Lanka. This goal was broadened midway through the project to include post-conflict areas in the north of the country.

The aim of this document is to share the important experiences and lessons generated by the I-FLCP with regard to the establishment, improvement and/or reconstruction of planned-for self-sustaining fish landing centres. These centres, if developed from the outset with a degree of financial sustainability in mind and if well managed, can function as a focal point for the rational economic development and better management of small-scale fisheries, contributing both to improved livelihoods and responsible fishing practices. The publication provides a consolidated account of key experiences and lessons learned from the I-FLCP. It is hoped that it will serve as a source of information and inspiration for further work in the financially sustainable development of small-scale fisheries infrastructure elsewhere. It draws on an extensive database of project monitoring and evaluation documents and working papers generated in the past three years.

The publication is structured as follows. Chapter 1 provides an introduction to the publication, how it is organized, linkages to other relevant FAO publications, explains the context within which the project was conceptualized and the project objectives, and provides an overview of the I-FLCP sites and key stakeholders. Chapter 2 describes the approach taken in implementing a wide variety of project activities to address the three project outputs. It looks at the involvement of stakeholders in detail and discusses the practical aspects of the initial profiling and selection process for landing site development. The importance of capacity development in ensuring sustainability of the project outcome is also addressed. Chapter 3 discusses the methodology of the project with regard to infrastructure development and in particular it describes the planning steps and procedures. It also refers to a comprehensive portfolio of drawings, bill of quantities and photographs s included as an appendix to illustrate the range of infrastructure developed by the project. Chapter 4 documents the various activities and outputs to support the capacity development of government staff and fishing communities. The training needs assessment process and training implementation are discussed, and the role of rural fisheries organizations and fisheries cooperative societies is explored. Chapter 5 provides an opportunity to present the comprehensive monitoring and evaluation process used by the project, use of the “traffic-light” management system, Google Earth mapping and introduces the use of a geographic information system as a management tool for the strategic planning of landing site development. Chapter 6 presents the lessons to be gained from the project: What works and what does not? Why? What could have been done better and how? The chapter also provides a simple cost-benefit analysis of the fish landing centre development inputs in Sri Lanka.

## 1. INTRODUCTION

### Why this publication?

The Restoration and Improvement of Fish Landing Centres with Stakeholder Participation in Management Project (I-FLCP) was implemented between August 2008 and September 2011. The project was a partnership between FAO, the Canadian International Development Agency (CIDA) and the Ministry of Fisheries and Aquatic Resources Development (MFARD) of Sri Lanka. Implementation of this project coincided with an important period of change in the modern history of Sri Lanka, with the ending of the 26-year civil war between the Government of Sri Lanka and the Liberation Tigers of Tamil Eelam (LTTE) in May 2009.

The remit of this project involved a wide range of both process (capacity development) and output-oriented (infrastructure development and procurement) activities. The project was designed to address fisheries infrastructure strategic planning issues at the central level, at the same time delivering development outputs in the field at fishing community level. In addition, it was logically a complex project to implement in a relatively short period, with many small works and community development activities located nationwide in 13 of the 15 coastal districts.

As the last national post-tsunami funded fisheries development project in Sri Lanka,<sup>1</sup> and thus benefiting with hindsight from other similar earlier projects (including emergency-funded projects), there are a number of valuable lessons to be gained from documenting this project, for both the benefit of management of the inshore/coastal fisheries in Sri Lanka and small-scale fisheries development further afield. The current project model is already being replicated in part to support further development initiatives in the north of Sri Lanka.

### Intended audience

Numerous projects, most usually funded by overseas development aid, have been implemented across the globe to promote the development of small-scale fisheries through the use of fisheries centres<sup>2</sup> in the past 30 years and more. In many countries these centres have an important role to play in supporting and promoting small-scale fisheries; they also often represent a significant investment made by a government in rural coastal fishing communities (particularly in small island nations such as in the Pacific region).

This paper documents the practical experiences and lessons gained from one country only, Sri Lanka, and aims to contribute to and help guide future development initiatives when donor agencies, projects and/or national governments are considering investment in any small-scale fisheries infrastructure or landing sites in general. This document provides an example of what is involved in planning and developing landing sites on a national scale. As such, it is targeted towards development practitioners, senior government officials, fisheries sector planners and government fisheries department staff charged with the responsibility for designing and upgrading fish landing centres (FLCs).

### Project context and rationale

As stated by Siar et al. (2011) with reference to fishing harbours, fish landing sites/fish landing centres (FLCs)<sup>3</sup> are similarly important meeting places for artisanal fishers, buyers, traders, government officials (inspectors and extension staff) and those providing services to a fishing community. They are places of encounter between public and private institutions and a point of convergence between

<sup>1</sup> Another regional project that supports regional fisheries livelihoods, including in Sri Lanka, remains ongoing until 2013.

<sup>2</sup> Labelled variously in different countries or by location/size as a fish landing centre, fish landing site, fisheries service centre (FSC), community fisheries centre, fisheries station, fisheries base and rural fisheries service centre (Gillett, 2010).

<sup>3</sup> The terms “fish landing site” and “fish landing centre” are considered interchangeable. For the sake of consistency, the latter is used throughout this paper.

production and trade; as such, they offer potential for the localized promotion of responsible fisheries, the reduction of waste and improvement of fish quality.

The overall scope of, and rationale for, the I-FLCP was to assist the efforts of the Government of Sri Lanka to revive the tsunami-affected (and subsequently postconflict) coastal economy, at the same time building back better livelihoods and helping to reduce resource waste, and, in so doing, reduce pressure on the coastal resources. The project scope combined the need to construct appropriate infrastructure with the more complex task of ensuring the sustainable management and maintenance of this infrastructure. Stakeholder participation was a vital input to ensuring this sustainability.

#### ***Project context – post-tsunami***

The Indian Ocean tsunami struck on the morning of 26 December 2004 causing widespread destruction and killing about 31 000 people in Sri Lanka, including 4 870 fishers. A significant amount of coastal infrastructure, including FLCs, anchorages and harbours, was damaged or destroyed. While the reconstruction of the larger harbours and anchorages received donor priority post-tsunami, the rehabilitation of the many smaller FLCs has developed at a slower pace.

In addition to the destruction or damage of many of the FLCs adversely affecting fishers' livelihoods, the tsunami also resulted in large numbers of fishers being relocated further inland. This made it necessary to make arrangements to ensure the security and safety of their equipment and gear. The context within which the project was conceptualized and implemented is discussed further in Chapter 2. The project was conceived in 2006, designed in mid-2007 and became operational in August 2008.

#### ***Project context – postconflict***

The 26-year civil war between the Government of Sri Lanka and the LTTE seriously disrupted the lives and the economic development of the entire country. The impact was most severe in the northern and eastern provinces, which account for about 60 percent of the nation's coastline, as these were the battlefronts of the war and as such were dislocated from national economic development for many years. By the time the conflict ended in mid-May 2009, more than 300 000 people were located in camps for internally displaced persons (IDPs) or with host families in the north. In 2010, almost 90 percent of these IDPs were released from the camps and returned to their homelands. Reports indicate that fewer than 3 000 IDPs remain in the camps (Sri Lankan Army, personal communication, July 2011).

Subsequent to the end of the civil war in May 2009, FAO completed a needs assessment and prepared a recovery and rehabilitation programme for the agriculture (including fisheries) sector in conflict-affected areas of northern Sri Lanka (FAO, 2009). The results from this appraisal encouraged the project to discuss options with the MFARD for supporting FLC development in the north. Following delays related to the presidential and national elections in early 2010, an initial needs assessment was completed in June 2010 and approval to proceed with investment in the north granted in August 2010. The postconflict recovery problems faced by coastal fishing communities in the north included:

- long-term internal displacement of fishing communities plus frequent military conflict along the coastal communities;
- damage and loss of boats, outboard engines and fishing gear;
- damage to fisheries infrastructure (fish auction sheds, feeder roads, community centres, net mending centres, engine storage sites and ice plants);
- a loss of the skills base in fish processing among fisherwomen, and damaged processing equipment;
- non-functional fisheries community organizations (that had previously been well-organized) owing to the dislocation of community leaders and members;
- inequitable distribution of tsunami-recovery resources to communities in the north;
- lack of access to fishing owing to time and area restrictions imposed by the security situation;

- lack of capacity of traditional craft-making boatyards and a lack of the introduction of new fishing boats, gear and technologies;
- lack of processing, storage and marketing facilities such as ice plants, drying racks and refrigerated stores and vans;
- lack of opportunities to participate in the Government's Ten-Year Fisheries Development Plan (2007 to 2016);
- limited inland and brackish-water fisheries as a result of damage to irrigation tanks and saltwater exclusion bunds, loss of canoes and fishing gear and a cultural preference for sea fish in the diet.

### ***Project context and the development priorities of Sri Lanka***

The context for the project was developed in line with the Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector 2007–2016 (MFAR, 2007). This key policy document articulates the following mission for the sector: directing the utilization of fisheries and aquatic resources for the benefit of the current and future generations. The policy objectives of the then Ministry of Fisheries and Aquatic Resources (MFAR, now MFARD) in this framework were stated as:

- to improve the nutritional status and food security of the people by increasing national fish production;
- to minimize post-harvest losses and improve quality and safety of fish products to acceptable standards;
- to increase employment opportunities in fisheries and related industries and improve the socio-economic status of the fisher community;
- to increase foreign exchange earnings from fish products;
- to conserve the coastal and aquatic environment.

The project was also reportedly (FAO, 2008) expected to deliver on addressing several of the Millennium Development Goals (MDGs) through direct and indirect support to the small-scale fisheries sector and livelihoods of the fishing communities. In particular, reference is made to Goal 1 (eradicate extreme poverty and hunger); Goal 2 (achieve universal primary education); Goal 3 (promote gender equality and empower women); and Goal 7 (ensure environmental sustainability).

In 2010, the MFARD set out five ambitious objectives for the fisheries and aquaculture sector to be achieved by 2013:

- increased per capita fish consumption, from 11.4 kg (in 2009) to 21.9 kg per capita;
- increased local fish production (landings), from 339 730 tonnes (2009) to 685 690 tonnes;
- increased price competitiveness by promoting marketing of fish – Ceylon Fisheries Corporation market share of 1.0 percent (2009) to be increased to 10 percent;
- social development of fishing communities through fisheries development;
- sustainable management of fisheries through use of new techniques and in line with international conventions (Law of the Sea).

### **Goal, outcome and objectives of the project**

The goal (long-term impact) of the I-FLCP was to improve the livelihoods of fishers and fishing communities in tsunami-affected areas. This goal was extended midway through the project life cycle to include postconflict (and to some extent post-tsunami) areas in the north of the country.

The proposed outcome of the I-FLCP was that rehabilitated FLCs are functioning and self-sustaining as a result of stakeholder participation in management. The specific outputs (components) of the project to achieve this outcome were:

- the capacity of Ceylon Fishery Harbours Corporation (CFHC) strengthened to coordinate landing site rehabilitation and management;

- FLCs rehabilitated in 15 districts;
- institutional frameworks for community participation in fisheries landing site management developed and implemented.

### **Project sites and geographic focus**

The project was originally mandated to work in all 15 tsunami-affected coastal fisheries districts of Sri Lanka. In practice for security reasons, at least until after the end of the war in May 2009, this had to be limited to the 11 coastal districts from Trincomalee in the northeast around to Puttalam in the northwest of the country (see Appendix 1). After May 2009, the project was requested to support economic development in two of the four northern provinces.

The project document originally set an ambitious target of 80 landing sites proposed for possible intervention. As discussed below, there are reasons why this was not achievable, or indeed realistic, within the two-and-a-half year time frame of the project.

### **Who were involved?**

A number of national institutions were involved directly and indirectly in project execution and implementation:

- The project was funded by the CIDA, implemented through the MFARD and executed by FAO.
- The key target government beneficiary institution was the CFHC, where the Project Management Unit (PMU) was based, but in practice the project also worked closely with the Department of Fisheries and Aquatic Resources (DFAR).
- The project worked with the Federation of Chambers of Commerce and Industry of Sri Lanka (FCCISL) in developing FLC business plans and in delivering small business planning capacity development support.
- The project worked closely with the National Aquatic Resources Research and Development Agency (NARA) in the development of the geographic information system (GIS) Shoreline and Near Shoreline Data System (SANDS) database.
- Training inputs were provided by a number of public institutions, including the National Institute of Fisheries and Nautical Engineering (NIFNE), the Sri Lanka Institute of Development Administration (SLIDA), the Lanka Hydraulics Institute (LHI), the University of Moratuwa and the National Institute of Social Development, in addition to various national and international private-sector training service providers.

In Sri Lanka, the MFARD has the overall policy mandate to manage the fisheries sector; the CFHC has the engineering capacity and operates the fishing harbours; and the DFAR has the extension services that support the communities using the landing sites.

### **The FLC development process – a checklist**

This section summarizes, for the benefit of future development initiatives, what it takes to develop one or more fish landing sites, based on the lessons learned (or least to be gained) from the Sri Lankan context. While acknowledging that every landing site is different, there are some common and essential activities to be undertaken to support an FLC development process. The following checklist of questions to be answered and issues to be addressed has been prepared with a project approach to FLC development. Reference is made where appropriate to where more information can be obtained in this paper:

#### **1. Identify the need for FLCs:**

- What problem are you trying to solve? Is an FLC the solution to the problem? Can you solve the problem without building an FLC (by, for example, constructing a simple access road to a landing site or building a quay wall)?

- Is this a regional/national developmental need or is this driven by postconflict or postnatural disaster needs?
- Review your government policy and plans for the sector. Is there a master plan for the sector that covers this kind of development?
- What has been built elsewhere – does it work successfully? If not, why not?
- Are there any lessons to be learned from any existing FLCs or previous development projects working in this sector?
- Is the private sector already building or running FLCs? If so, what assistance do they need (if any)?
- Think carefully about how your FLCs are going to be owned, managed and maintained. As FLCs are rarely profitable or even financially self-sufficient, they may require continual government support – is the government willing to provide this support?
- Consult with all stakeholders (through a participatory rural appraisal [PRA] approach) and try to secure stakeholder “buy-in” to the project (at all levels) at the earliest opportunity.
- Obtain a realistic and objective assessment of the probable monthly, seasonal and annual throughput of fish and fish products at the FLC (as this will largely determine how financially self-sufficient the FLC could be). Obtain a second opinion if in doubt.

## 2. Approval and funding for your project:

- Do you need to approach an aid donor and/or obtain (co)financing from the government?
- Will a local contribution be required from the beneficiary community (in cash or in kind, for example, land or the provision of labour)?
- Appraise your project for its technical, financial (economic) and institutional feasibility – this should include an initial (not detailed) screening of possible FLC development sites.
- Prepare your project document, budget and plan (time line).
- Ensure the maintaining of stakeholder “buy-in” to the project (at all levels) – this is particularly crucial if this phase of the development process is protracted (over a number of months/years).

## 3. Project start-up (inception phase):

- Establish a project team and/or allocate staff from a dedicated PMU (national and international staff as necessary).
- Complete a detailed FLC needs assessment and independent (impartial) environmental screening (see Chapter 2). You may need to reject some sites for specific reasons.
- Also establish a system of screening FLC development applications for their financial/economic viability (see Chapter 6).
- Complete a training needs assessment (TNA) (for government staff and FLC officials, staff and users/beneficiaries) (see Chapters 2 and 4).
- Solicit active support from community stakeholders, non-governmental organizations (NGOs) and local government staff (try to have project “champions” elected by the local community to support your work) – explain the development process to the fishing community so that they are aware of what can, and cannot, be done and/or changed later on (and what can be realistically funded).
- Identify your procurement method (for the benefit of contractors) – will you use a cluster approach for example? (see Chapter 3).
- Establish a project FLC database and monitoring and evaluation (M&E) system (that complements or is compatible with existing systems in use by the relevant government ministry, department or agency) (see Chapter 5).
- Plan your work if necessary around seasonal changes in weather and fishing patterns – do not underestimate how long it takes to complete all of the tasks, particularly if you are using small local contractors (see Chapter 3 for a comprehensive checklist of steps to follow specifically related to the infrastructure planning process).

#### 4. Project implementation phase:

- Based on the results from the needs assessment and taking into account any specific issues raised during the environmental screening, prepare a detailed FLC design (or designs) in consultation with the beneficiary community.
- Identify the community-based organization (CBO) that will be responsible for managing and operating the FLC.
- Prepare the specifications (bill of quantities [BOQ]) and bid documents (see Chapter 3) for all works contracts – remember that no two fishing communities and landing sites are the same, so each FLC should be designed according to the specific needs of each community.
- Tender and award contracts for construction work, equipment supply and training.
- Implement a reporting mechanism (monthly, quarterly and annual) for the various stakeholders – community, national government and donor. This is part of your M&E system (see Chapter 5).
- Undertake regular monitoring site visits to each FLC (at least once a month) to meet with contractors and consult with beneficiaries.
- Implement a training programme for both government staff, CBO officers/staff and beneficiary communities, using a training of trainers (TOT) approach where possible (see Chapter 2).
- Prepare a “tailored” business plan and operational guidelines (standard operating procedures [SOPs]) for each FLC – involve the CBO officers and relevant local NGO partners to support the development of the FLC as a business “hub” for the fishing community (see Chapter 4).
- Prepare a memorandum of understanding (MOU) to legitimize a system of user rights for the local community (CBO) (see Chapter 2).
- Provide capacity development support to address fisheries management issues – simple resource conservation and management techniques can be promoted by the FLC

#### 5. Completion and postproject completion:

- Undertake final inspection site visits to ensure that the building work is completed to the required standard; listen to the genuine concerns of the local community (FLC beneficiaries).
- Handing-over of the FLC to the local community – remember to follow local protocol.
- Prepare final completion reports and expenditure reports as appropriate for the government and aid donors.
- Check the use of the FLC at the end of the defect liability period (typically, six months), have any defects rectified and issue final completion certificates so that retention payments can be released to contractors.
- Monitor the implementation of the MOU and provide ongoing technical and operational support to the CBO, which will be required as CBO officers change over time and the FLC itself evolves. This is typically a function of a fisheries extension service

#### Other relevant publications

This document is intended to complement previous publications by FAO, including manuals prepared for engineers and architects involved in the design of fisheries infrastructure, where lessons learned from previous projects are well documented. Those who find this publication useful for their work or research may also wish to consult the following related FAO publications:

**Ben-Yami, M. & Anderson, A.M.** 1985. Community fishery centres: guidelines for establishment and operation. FAO Fisheries Technical Paper No. 264. Rome, FAO. 94 pp. (also available at [www.fao.org/docrep/003/X6863E/X6863E00.htm](http://www.fao.org/docrep/003/X6863E/X6863E00.htm)).

**Medina Pizzali, A.F.** 1988. Small-scale fish landing and marketing facilities. FAO Fisheries Technical Paper No. 291. Rome, FAO. 68 pp. (also available at [www.fao.org/docrep/003/T0388E/T0388E00.htm](http://www.fao.org/docrep/003/T0388E/T0388E00.htm)).

**Nautilus Consultants.** 1987. Manual for the management of small fishery enterprises. A manual prepared for the FAO (FI:GCP/INT/342/AUL). Rome, FAO. 192 pp. (also available at [www.archive.org/stream/manualforthemana034703mbp/manualforthemana034703mbp\\_djvu.txt](http://www.archive.org/stream/manualforthemana034703mbp/manualforthemana034703mbp_djvu.txt)).

**Sciortino, J.A.** 1995. Construction and maintenance of artisanal fishing harbours and village landings. FAO Training Series No. 25. Rome, FAO. 137 pp. (also available at [www.fao.org/docrep/v5270e/v5270e00.htm](http://www.fao.org/docrep/v5270e/v5270e00.htm)).

**Sciortino, J.A.** 2010. Fishing harbour planning, construction and management. FAO Fisheries and Aquaculture Technical Paper No. 539. Rome, FAO. 337 pp. (also available at [www.fao.org/docrep/013/i1883e/i1883e00.htm](http://www.fao.org/docrep/013/i1883e/i1883e00.htm)).

**Siar, S.V., Venkatesan, V., Krishnamurthy, B.N. & Sciortino, J.A.** 2011. Experiences and lessons from the cleaner fishing harbours initiative in India. FAO Fisheries and Aquaculture Circular No. 1068. Rome, FAO. 94 pp. (also available at [www.fao.org/docrep/014/am432e/am432e.pdf](http://www.fao.org/docrep/014/am432e/am432e.pdf)).

**Verstralen, K.M., Lenselink, N.M., Ramirez, R., Wilkie, M. & Johnson, J.P.** 2004. Participatory landing site development for artisanal fisheries livelihoods: users' manual. FAO Fisheries Technical Paper No. 466. Rome, FAO. 128 pp. (also available at [www.fao.org/docrep/007/y5552e/y5552e00.htm](http://www.fao.org/docrep/007/y5552e/y5552e00.htm)).

## 2. PROJECT APPROACH AND METHODOLOGY

### Implementation framework

The framework and context within which the project was conceptualized and implemented was essentially three-fold. This necessitated a range of both process-oriented and output-oriented activities to achieve the project outputs.

#### *Addressing the master plan*

In response to a request from the Government of Sri Lanka following the tsunami, FAO assisted with the planning of post-tsunami fisheries infrastructure rehabilitation and development by providing technical assistance to prepare a Master Plan for Reconstruction and Development of Anchorages and Fish Landing Centres (MFAR and FAO, 2006). As part of this plan, the restoration and improvement of FLCs (and the I-FLCP) was identified by the Government of Sri Lanka Government to support the longer-term objective of reconstructing and developing the inshore marine fisheries sector. The master plan also contained a list of sites selected based on a scoring system developed in the plan and subsequently refined thereafter depending on the availability of government land. One hundred sites were identified with 80 of these to be targeted by this project as a priority.

The project was also designed in line with the Government's priorities of optimum utilization of the nation's resources, food security and national security, as set out in the *Mahinda Chintana* (A Vision for Sri Lanka) and the Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector 2007–2016 (MFAR, 2007).

One of the guiding principles of post-tsunami reconstruction in Sri Lanka is “building back and better”. As such, it was considered necessary to improve the facilities at landing centres for the small-scale fisheries sector beyond their pre-tsunami levels. These have included basic facilities for the secure storage of engines and gear, fish and ice storage facilities, fish handling areas and auctioning facilities, and access to power and clean water in line with the Master Plan. Improved access roads were also considered in some localities to attract more buyers, thus improving the bargaining power of the producers.

What were not included were breakwaters, groynes or jetties (except in two specific locations) as these marine structures were, in general, even for relatively small structures, well beyond the financial funding capacity of the project.

#### *Developing stakeholder participation in FLC management*

Much of the well-intentioned immediate post-tsunami development has failed to engender sufficient long-term participation and ownership by the fishing communities. In many cases, infrastructure development has gone hand-in-hand with or immediately followed emergency relief with the supply of new boats, engines and nets. The government has been (and to some extent still is with other development initiatives) saddled with the maintenance and upkeep of much of this infrastructure, some of which is already in disrepair or has never been used for the purpose it was intended.

Therefore, a key aspect of this project from the outset, one might say what should have been the primary focus of the project, was to ensure the participation of a wide variety of stakeholders at all stages in the design, build and subsequent management of the FLCs. In this way, the project strived to contribute towards the financially sustainable use of the infrastructure by the communities themselves, while at the same time trying to improve the equitable access to marine resources and to improve directly the livelihoods of the primary stakeholders and their local fishing communities.

#### *Proper planning*

Many donor agencies were involved post-tsunami in assisting the Government in the reconstruction and development of fisheries-related infrastructure. It was evident during the design phase of the I-

FLCP (in 2007) that the institutional capacity of the Ministry of Fisheries and Aquatic Resources (now the MFARD), and in particular the CFHC, was insufficient to plan and coordinate all of this infrastructure investment. Therefore, it was considered appropriate in the context of the project design to try to ensure that future investment was better coordinated and plans harmonized to avoid duplication of effort.

As part of the planning process, the reduction of post-harvest losses was (and remains) a priority policy objective that was articulated by the Ministry of Fisheries and Aquatic Resources in the project design phase and considered crucial for increasing the participation of small-scale fisheries in the domestic, regional and international fish trade. Reducing post-harvest losses increases the supply of fish without increasing fishing effort. In this regard, the rehabilitation of fish landing centres, the provision of simple facilities and services, as well as the participation of user groups in management, are necessary steps to improve livelihoods and food security.

### **Setting the scene – how important is the sector?**

Marine fisheries are of considerable social and economic importance along the entire 1 770 km of Sri Lanka's coastline. According to official data, landings in 2010 were 404 800 tonnes, up 13.2 percent on 2009 and a 250 percent increase on official landings in 2005 (MFARD, 2011). Of this, only 17 500 tonnes (processed weight) were exported (valued at USD175 million). Sri Lanka remains a net importer of fish and fish products by volume but not by value.

In 2010, the fisheries sector contributed 1.7 percent to gross domestic product<sup>4</sup> and employed more than 221 000 fishers directly<sup>5</sup> and 2 750 000 people indirectly in related activities. The sector constituted 6.5 percent of total employment, and the livelihoods of close to 3.0 million people (14.4 percent of the total population) depend directly and indirectly on the fisheries sector. In 2010, per capita fish consumption was 14.5 kg, and fish and fish products contribute almost 54 percent of the total animal protein consumed in Sri Lanka.

The fishing fleet comprises a total of 45 163 vessels, broken down as follows (MFARD, 2011):

Multi-day boats/offshore vessels	3 346
Inboard single day boats	1 177
Outboard motor fibreglass reinforced plastic (FRP) boats	18 770
Motorized traditional boats	2 680
Non-motorized traditional boats	19 190

In addition, there are 983 beach seines in operation nationwide. These are invariably owned by powerful local business people or *mudalali*.<sup>6</sup> There were 82 active ice plants nationwide in 2010 with a production capacity of almost 2 200 tonnes per day (MFARD, 2011).

Fish landing centres are located on a beach, river mouth, at the entrance to a lagoon or on inland reservoirs (referred to in Sri Lanka as “tanks”). There are currently 891 recorded FLCs in Sri Lanka, up from 785 in 2009 (MFARD, 2011).<sup>7</sup> Most FLCs provide no shelter against bad weather and have no or few shore facilities. Some sites (less than 10 percent) include simple rest rooms, net mending sheds, auction centres and fish handling areas. Where beaching of boats is possible, fish is generally off-loaded direct from the boats pulled up onto the beach. There is generally limited use of ice.

Since the tsunami, reportedly large numbers of fisherfolk who were living in villages close to their FLC have been moved away from their original places of residence and, as a result, the need to make arrangements to ensure the security and safety of their equipment and gear has become a priority. In some cases, there are now cases of illegal squatting by fisher families close to their traditional FLC,

<sup>4</sup> The marine fisheries sector contributed 1.5 percent and inland fisheries 0.2 percent (MFARD, 2011).

<sup>5</sup> This includes full-time and part-time fishers and fisherwomen.

<sup>6</sup> These are intermediaries who serve as agents to village fish traders.

<sup>7</sup> Anecdotal evidence (from the project) suggests that the number of FLCs may exceed 1 000 nationwide.

often with a deterioration in living conditions compared with pre-tsunami living standards (no or limited sanitation/running water and electricity supply).

An anchorage is generally a lagoon, estuary or other naturally sheltered waterbody traditionally used by fishers as a safe haven providing shelter during the monsoon season.<sup>8</sup> There are 40 recognized anchorages in the country (MFARD, 2011). Anchorages have generally been established at important FLCs where a substantial number of motorized fishing vessels are operating, but where harbours have not yet been constructed. The range of services at these anchorages is considerably less than the services provided in the harbours; some have minimal or no shore-based support facilities.

Fishing harbours provide a wide range of facilities and services targeting the larger multiday fleet. There are currently 18 main fishing harbours nationwide protected by breakwaters providing year-round safe approach and navigation, anchoring and berthing facilities.<sup>9</sup> Ten of these were damaged during the tsunami. Many of these harbours also have shore-based fish processing facilities used by the fish processing industry. All of them are managed and maintained by the CFHC.

#### ***Post-harvest losses***

Poor onboard handling practices and inadequate infrastructure facilities at many landing centres, anchorages, harbours and auction halls result in post-harvest losses estimated at up to 40 percent. This reduction in the quality of the fish traded is an economic opportunity-cost loss only as this spoiled fish still remains in the local market.

This problem is most acute in the tuna fishery targeted by the larger multiday boats and is a direct consequence of vessels staying at sea for too long combined with the limited use of ice and no onboard freezing technology. Despite limited use of ice, post-harvest losses at FLCs are less significant as the fishing trips are shorter (at most 12 hours) and the fish is traded at the landing site. A parallel project implemented in 2009–2010 (Minimum Standards for Fish Handling and Reduced Post-Harvest Losses in Selected Tsunami-Affected Communities, GCP/SRL/056/SPA) sought to address these issues through improved regulatory conformity, fish quality and reduced post-harvest losses in participating tsunami-affected communities.

#### ***Sector policy and legislation***

During the short-term emergency tsunami rehabilitation phase (2005–06), the Government focused on awareness creation and the avoidance of inadvertently rebuilding an excessive fleet size. By contrast, the medium and long-term activities (2006–2010) focused on the improvement of fisheries support structures, and strengthening of appropriate institutional structures and capacities for fisheries management (including vessel registration, fishing licensing and community-based management systems, and improving the value chain for fishery products).

The medium-term fisheries development strategy supporting the policy framework, within which the I-FLCP was conceived, therefore necessitated a need to rehabilitate and improve the fish-handling infrastructure at the landing centres and anchorages to increase the potential for higher quality fish products and, hence, higher revenues. One important principle of this development strategy was that the rehabilitation of infrastructure and provision of these facilities had to be accompanied by the establishment of user group management structures to ensure the sustainability of the fish landing centres and their maintenance. This proved to be the ultimate challenge for the I-FLCP.

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<sup>8</sup> Sri Lanka's coastline is exposed to the northeast monsoon between December and March and to the southwest monsoon between June and October. These are significant limiting factors as the shoreline along many of the nation's FLCs is highly exposed, thereby limiting the ability for fishers to launch and recover their boats.

<sup>9</sup> With plans for a further nine harbours.

## Stakeholder identification

The stakeholder identification process started during the project design phase. An important first activity during the inception phase was the completion of a profile and needs assessment of FLCs (I-FLCP, 2009). This report provided a detailed planning matrix containing basic information on 50 landing centres located in nine administrative districts, including their immediate infrastructure and training needs, identified primary stakeholders and the approximate cost of the proposed infrastructure (on the basis of certain assumptions on sizes and type of structures).

The direct or primary beneficiary stakeholders of the I-FLCP were the fishing communities located at or close to the FLCs where the project operated. These stakeholders included the boat owners and their crews, fish handlers, traders, vendors and processors, plus the fisherwomen and net menders using the landing sites.

In addition to these primary beneficiaries, there were also indirect, or secondary, beneficiaries. These included upstream and downstream businesses directly or indirectly servicing or supplying goods to the landing sites, linked to boat and engine repair and the supply of fuel, ice and fishing gear. It also included consumers and the fisher families themselves.

Appendix 2 provides a detailed list by landing site of the direct and indirect beneficiaries, plus the number of female beneficiaries. Other important stakeholders in the outcome of the project included:

- the national government (in particular the MFARD and DFAR);
- officials of the District and Divisional Fisheries Offices and the Fisheries Co-operative Unit of the DFAR;
- the provincial councils;<sup>10</sup>
- CBOs – including the traditional fishery cooperative societies and more recently established rural fisheries organizations;<sup>11</sup>
- local, regional and national representative bodies – for example, the FCCISL, with whom the project worked closely to implement various project activities.

## Buy-in to project objectives – the importance of consultation

In line with government policy, the project adopted from the outset a participatory approach at the community level to all aspects of project delivery – from the initial needs assessment through to the detailed design of the infrastructure, the development of business plans for each FLC and the identification of community training needs.

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<sup>10</sup> Unlike the agriculture sector, fisheries is not a devolved sector in Sri Lanka and is still administered by the national government rather than the by the local government.

<sup>11</sup> A rural fisheries organization (RFO), which is also referred to as a village-level fisheries organization or a fisheries community organization, is the grassroots level organization of the newly established National Fisheries Federation (NFF). The NFF is a key initiative of the MFARD to enhance the socio-economic status of the fishing communities. Unlike a fisheries cooperative society (FCS), an RFO is inclusive of a larger group (range) of stakeholders involved in the fisheries sector. This includes fishers, boat owners, fishing crew members, fish processors, fisherwomen, fish traders, net menders and fish handlers, all of whom support the development of the fishing industry in Sri Lanka. They are registered organizations with the DFAR and each member contributes LKR100 annually. The official objective of the RFO is to support the eradication of poverty among fishing families by raising their living standards through contributions to fisheries development. It remains unclear whether this also includes a role in fisheries management. The RFOs are expected to contribute to increased sustainable production and be involved in the management of FLCs, development of fisheries housing programmes, improvements to health and sanitation, and to participate in pension and insurance schemes, special loan schemes, skill development among fisherwomen, provision of pre-school facilities and in rescue operations in case of distress at sea. The MFARD also plans for the RFOs to be assisted with the introduction of modern technology to increase fish catches, deal with illegal, unreported and unregulated fishing and improve organization of the market.

While it was considered important to adopt this approach to help ensure the long-term sustainable management of the landing centres and facilities provided, such an approach required considerable time and effort at the field level and at the project planning stage. This approach could not be implemented in isolation from government institutions; the involvement of ministry staff at the field level (under the DFAR) to support implementation was considered essential. Therefore, appropriate training, follow-up and resources were an important element to ensure that DFAR staff were able to carry out this work.

### **The issue of land ownership**

One of the shortcomings of some earlier initiatives during the post-tsunami emergency period was that, perhaps in the “race” to disburse funds and rehabilitate communities, not enough attention was paid to ensuring that infrastructure was being built on public land or land communally owned by a community. Frequently, this issue was exacerbated by the fact that the land records (title deeds, etc.) has been washed away or destroyed in the tsunami. The project treated this issue as one of the key selection criteria critical to the evaluation and selection of an FLC for development.

### **Selection criteria – the basics**

As is the case in most countries with large coastlines and significant small-scale fisheries, Sri Lanka has hundreds of beach landing sites. Given the potential threat of opportunistic capture of the project agenda and project resources for local and national political gain, there was a need for a transparent process in selecting sites for development. The absolute basic criteria agreed for the project were:

- that priority be given to landing sites located in a district affected by the tsunami;
- there is clear landownership (both for the landing site and access to it) – either by the government or the fisheries cooperative societies;
- must not be located in a security-sensitive area;
- must not be located in an environmentally sensitive area;
- there is an existing CBO or flexibility to create one remains;
- no similar rehabilitation or new building work has been undertaken at the landing site (or is planned by another agency).

A set of initial draft criteria for selection and prioritization of FLCs was developed by the project. These draft criteria were then validated in each district to ensure their appropriateness and relevance and so as not to overgeneralize from a few cases only. The validated criteria focused on the following key factors for which percentage points were allocated based on their relative importance (see Appendix 3 for a detailed breakdown of selection criteria):

- tsunami impact and emergency related – 15 percent;
- socio-economic/economic – 35 percent;
- technical – 20 percent;
- environment – 10 percent;
- organizational development and community participation – 20 percent.

This ranking was adapted from an earlier scheme developed in the master plan (MFAR and FAO, 2006) but which placed less emphasis on organizational issues (10 percent instead of the proposed 20 percent) and which excluded environmental issues altogether; both criteria considered important in the longer-term sustainability of landing sites and which the project therefore included in its own selection criteria. During the national inception workshop for the project, there was also a strong recommendation from the participants that priority for project site selection should not be based solely on whether or not an FLC was affected by the tsunami.

The highest allocation (percentage score) was given by the I-FLCP team (which prepared the initial ranking of each FLC with local MFARD staff) to socio-economic and economic criteria such as the number of boats, number of users, period of fishing, volume of fish catch, number of *Samurdhi* (low-

income) beneficiaries, and distance to schools and hospitals. Under the technical criteria, inadequacy of shore facilities and access to main roads, status of marine structures affecting berthing of boats, etc. was considered. Environmental factors included ranking the sensitivity of the local ecosystem, and the availability of waste management systems was also taken into consideration. Regarding the institutional and organizational criteria, this focused on the strength of the fisheries cooperative society (FCS) in terms of membership, the participation of women, voluntary services provided to the members and the apparent willingness of the fishing community to associate in the participatory management process.

The master plan (MFAR and FAO, 2006) proposed a system of assigning an economic value to various types of fishing vessel as part of the economic evaluation criteria for selecting FLCs for development (Box 1). The I-FLCP chose not to use this system as it was considered that it might lead to the marginalization of landing sites servicing a large number of smaller craft. In addition, the number of boats operating at many of the FLCs as given by the fishing community was often at variance with the boat census carried out in 2006/07 (MFAR, 2008). Therefore, it was considered necessary to review, during the PRA process, the local fleet at each FLC in consultation with the district and divisional fisheries staff and the fishing community.

Instead, the project chose to confine its economic evaluation, and thus a proxy of the cost–benefit of investing at each specific FLC, by comparing the cost of identified infrastructure needs at each landing site with the number of primary and secondary beneficiaries. These criteria were not used in isolation, and a process of participatory planning was used to ensure that the community and local government stakeholders were involved at the outset in both the selection of landing sites in their district and the type of intervention proposed.

**BOX 1**  
**Valuing economic criteria related to fishing activity**

The system for valuing the economic criteria related to the fishing activity at a fish landing centre is based on general assumptions on the number of fishers on board the different types of boats and the yearly catch of each boat type. This makes it possible to value the fishing activity based entirely on the number of different types of boats. These data are more accurate and more accessible than data on the number of fishers and the amount of catch. The accompanying table shows the number of fishers on board the different types of boats and the yearly catch. This information is used to define so-called boat-fisher-catch (BFC) units.

**Weight of different kinds of boats to build up BFC units**

Type of boat	No. of fishers	Catch (tonnes/year)	BFC units
One-day boat	3–4	20–25	5
Fibreglass reinforced plastic (invariably a planning-hull skiff)	2–3	10–15	3
Outboard motorized traditional craft	2–8	8–10	2
Non-motorized traditional craft	1–2	4–6	1
Beach-seine craft	15–20	40	10

*Source:* Extracted from MFAR and FAO (2006).

### Consultation and the participatory rural appraisal process

The PRA approach provided a means through which community empowerment was used as the basis to capitalize on local knowledge and potential for development. The PRA approach ensures that:

- all stakeholders are respected and regarded as equals;
- women are able to participate and contribute;

- all stakeholders are able to play a part in the development process;
- programmes are appropriate and realistic;
- there is ownership of the project by the principal stakeholders;
- the long-term commitment and responsibility of individual stakeholders is increased.

The key elements of the participatory approach and objectives of the stakeholder consultations were:

- to collect background data and profile each FLC;
- to arrive at a common understanding among stakeholders on what is happening at a landing site and agree on a common vision for the future of the landing site;
- to map the flow of activities, goods and services (and, later on, waste and other environmental issues) at the landing site;
- to identify key actors involved in each stage of the development process.

Information for the FLC profiles (see Appendix 4) was gathered using focus group discussions with the assistance of the DFAR field staff, as record-keeping was often limited or non-existent at the village level. The number of stakeholders attending the focus group discussions varied from 5 to 20 and included fishing community leaders (men and women), boat owners and crew members, fish marketing agents, fish vendors, net menders, beach seine operators, net handlers and office bearers of FCSs.

### **Needs assessment – the starting point**

The project log-frame specified that the I-FLCP was mandated to work in all 15 coastal districts with a target of 80 landing sites to be completed and/or rehabilitated. The provisional budget for this component of the project was USD 2.6 million, equivalent to USD 32 475 per site. Sri Lanka has however hundreds of FLCs. Given the limited project resources the first task in the development planning process was therefore to initiate a site selection process based on the selection criteria discussed earlier. The CFHC initiated this by providing a list of 34 landing sites for consideration, derived from the Master Plan of Fish Landing Centres prepared by FAO on tsunami-affected coastal regions (MFAR and FAO, 2006).

From August 2008 to January 2009, project consultants profiled these and other potential FLCs as part of a detailed and thorough needs assessment covering initially nine coastal districts (as the districts in the north of the country were still conflict zones in late 2008 and therefore not easily accessible). Extensive consultation and PRA with fishing communities and the district-based fisheries officers was needed to complete the field investigations. This exercise also provided an early opportunity to assess options for the type of institutional model applicable to the future management of the FLCs.

A total of 50 landing sites were eventually short-listed for project support<sup>12</sup> from the 9 coastal districts of Hambantota (Tangalle), Matara, Galle, Kalutara, Gampaha (Negombo), Puttalam, Trincomalee, Batticaloa and Ampara (Kalmunai) (Appendix 1).

The needs assessment involved consultation with the fishing community and stakeholders to collect a wide range of data, including:

- number and type of boats and fishing gear used;
- target species, seasons landing data and average catch rates (day/month/annual);
- fish handling practices and market chain/distribution patterns;
- distance to the closest landing centres;
- impact of the tsunami and the recovery process;
- availability of landing facilities and perceived requirements/needs;
- type of land ownership, extent and suitability;

<sup>12</sup>

Referred to as Project Phase I sites.

- coastal profile (status of erosion, bathymetry, etc.) and other environmental issues;
- socio-economic information (*Samurdhi* beneficiaries, distance to schools and hospitals, availability of public transport and evidence of social/community conflicts);
- number and type of users of the FLC;
- details of the FCS including membership, funding status, businesses carried out and any voluntary work undertaken;
- judgement on the possibility and willingness of the FCS to take up responsibility for the management and maintenance of new facilities/infrastructure;
- records of accidents at sea (type/frequency);
- record of training received including number of participants/sources of training;
- capacity building/training needs.

The pro-forma questionnaire used to collect this data and profile the FLCs is provided on the accompanying CD-ROM.

### **A non-prescriptive approach – every fish landing site is different**

The master plan (MFAR and FAO, 2006) recommended a strategy to develop FLCs on a modular basis; for example a net mending module, engine and gear store modules, rest room module and office module. Buildings were proposed to be either single storey or two storeys, primarily dependent on the availability of land rather than on any socio-economic need or economic cost–benefit criteria. Previous studies (needs assessments) and the subsequent assistance provided to Sri Lanka appear to have generally adopted a similar investment strategy.

Early on the I-FLCP acknowledged that no two landing sites or FCSs are the same in terms of their geography, physical and institutional capacity and development needs. Because of the diversity of communities and fisheries livelihoods, it was considered important that a flexible approach be taken to landing site rehabilitation and related capacity development of the communities. This inevitably had implications for the project in managing a diverse range of works contracts, training needs, capacity development of CBOs and the need for a more demanding M&E of project activities. However, in comparison with the prescriptive approach taken by some other projects, the flexible approach was acknowledged as resulting in a more effective and locally relevant development of FLCs (GreenTech, 2011).

### **The importance of environmental screening**

Fisheries-related activities that can have a potentially negative impact on the environment are well documented. Best practice requires that the fishing sector is expected to reduce its impact to the minimum possible in ways that are also compatible with its own sustained existence (see FAO Fisheries and Aquaculture Department Web page [www.fao.org/fishery/topic/12273/en](http://www.fao.org/fishery/topic/12273/en)).

With this consideration in mind, and following the initial site selection and needs assessment, the next step in the planning process was therefore environmental screening of the landing sites. This was done to evaluate the impact on the environment of the proposed infrastructure development and in so doing filter out any sites that were environmentally sensitive. This screening process was developed in line with both international best practice, as exemplified by the Code of Conduct for Responsible Fisheries (the Code), and guidelines of the Government of Sri Lanka formulated by the Coast Conservation Department (CCD) to minimize the risk of investment within the coastal zone through the declaration of new buffer zones.<sup>13</sup> Sites involving minor road works and sites located inland or on river mouths and in lagoons outside of the remit of the CCD fall outside of the government guidelines.

The coastal zone is defined in the Coast Conservation Act as the area lying within the limit of 300 m landward of the mean high-water line and a limit of 2.0 km seaward of the mean low-water line, and in the case of rivers, streams, lagoons or any other body of water connected to the sea either permanently

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<sup>13</sup> No build zones were formulated as a direct response to the tsunami.

or periodically, the landward boundary shall extend to a limit of 2.0 km measured perpendicular to the straight baseline drawn between the natural entrance points identified by the mean low-water line thereof and shall include waters of such rivers, streams and lagoons or any other body of water so connected to the sea.

This screening process was developed and implemented by two project staff, neither of whom was involved in the original needs assessment (in order to ensure some degree of impartiality and as an independent check of the relevance of the sites selected). An environmental screening questionnaire was prepared, which included checks on various wastewater, waste management and institutional issues (see Appendix 4). This questionnaire was used in parallel with a sanitary checklist and a supplementary environmental checklist sourced from the European Union (Member Organization) Strengthening Fish Products Health Conditions Programme (SFP).<sup>14</sup> Information from the CCD developer's guide and permit procedure for coastal development was taken into account in developing the environmental screening questionnaire. Use of the results from the screening process is discussed in Chapter 3.

### **Capacity development – training, awareness-raising and cross-visits**

Capacity development of government institutions and the fishing communities is central to the issue of ensuring the sustainable management of FLCs, which in turn was the desired outcome of this project. The issue of the sustainable management of FLCs has not been addressed to such an extent in Sri Lanka before. As such, the I-FLCP has piloted a new approach, with the inherent dangers that any pilot approach brings. One of the lessons learned from previous investment in the sector (where it included the development of landing centres) is that, while it is relatively easy to identify the needs of small village level infrastructure, the challenging task is the proper management and maintenance of these facilities at the end of the project and to provide users with the services they require (FAO, 2008). Addressing this issue was at the core of project component 3 (“Institutional frameworks for community participation in fisheries landing site management developed and implemented”).

The MFARD has the overall policy mandate to manage the fisheries sector; the CFHC has the engineering capacity and operates the fishing harbours; and the DFAR has the extension services that support the communities using the landing sites. With increased investment in the sector in the seven years since the tsunami, it has become evident that there is a need to ensure and maintain sufficient capacity within the division of responsibility of all three of these institutions in order to coordinate and oversee the management and maintenance of all of the fisheries-related shore, harbour and marine infrastructure.

The approach taken, essentially a TOT approach, was two-fold. First, the project started with a comprehensive TNA across all three government institutions in order to prepare a government officer training plan. The objective of the plan was to strengthen the capacity of MFARD, DFAR and CFHC staff with a view to improve their knowledge and skills base and attitudes towards the sustainable management of the FLCs.

Second, once the government staff had been trained, they were to be supported and mentored by the I-FLCP to help develop FLC management skills and the entrepreneurial competencies of fishing communities. The logic behind this two-stage capacity development strategy was that it was agreed that the preparedness and readiness of MFARD, DFAR and CFHC staff are considered as prerequisites for sustainable FLC community development, particularly as staff from all three organizations, but particularly the DFAR, will need to be involved in the social mobilization of the target fishing communities. The two-stage training programme was complemented with the delivery of institutional

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<sup>14</sup> See on the Web page of the Strengthening Fish Products Health Conditions Programme (<http://sfp.acp.int/en/guide>) ART023GEN – Guide for the Selection of Location and Design of Sanitary Standards for Landing Sites and associated PowerPoint presentation: Manual\_ART023GEN\_091201-reduced.pdf 10\_01\_19\_ART028GEN\_ppt\_port\_Design.pdf

development support to CBOs (FCSs and rural fisheries organizations [RFOs]) plus fishing community group awareness-raising through a cross-visits programme.

### **Landing centre co-management committees<sup>15</sup>**

The project had originally considered supporting the formation of broad-based (in terms of membership) FLC co-management committees as a way of building an institutional framework to help ensure the sustainability of the FLC facilities. It was originally (pre-project) considered that these new institutions should be all-encompassing with a wide range of stakeholders (government and semi-government). However, it was evident early on in the project's work that this was unworkable, at least within the time frame of the project. In addition, in mid-2010, the MFARD introduced the concept of RFOs to "replace" the FCSs, and this institutional framework, where it exists and works, serves a similar purpose.

Therefore, the project has built co-management responsibilities using a people-centred sustainable livelihoods approach, targeting existing institutional structures such as the RFOs and FCSs, supported by the DFAR, and focusing instead on the preparation of a working business plan and introduction of SOPs. An MOU, included on the accompanying CD-ROM, was also developed by the project to support this approach and, in so doing, formalize linkages between the key stakeholders.

As the cooperative societies have in effect been replaced (from the Government's perspective) by RFOs, but without the necessary legal instruments in place beforehand, managing the handover of some of the FLCs became a more complex task than was originally planned because of the institutional, legal and local political conflicts between FCS and RFO membership. The I-FLCP was able to address most of these conflicts through a concerted effort of consensus building with the relevant stakeholders and with additional support from the district-based MFARD staff.

### **Role of government**

The Government of Sri Lanka played a key role in the design and delivery of the project and has a significant stake in the post-project sustainability of the outputs. This project was identified and considered essential by the Government of Sri Lanka in order to contribute to the longer-term objectives of the reconstruction and development of the marine fisheries sector. The project was designed and implemented in line with government policy, accommodating political changes in development strategy wherever possible within the specified project goal and outcomes. The role of the key government institutions involved in this project are summarized as follows and described in much greater detail in an institutional analysis and capacity assessment of the MFARD prepared by FAO (Banks *et al.*, 2007).

#### ***Ministry of Fisheries and Aquatic Resources Development (MFARD)***

The MFARD is a dedicated national ministry with its own cabinet minister. It has the responsibility to implement laws, policies, plans and programmes for the development of the fisheries and ocean resources, and for the management of the departments, agencies and the corporations under its control. The ministry has six divisions and one unit and has a relatively small number of employees (180) owing to the primary focus on policy as opposed to implementation activities. Most units within the ministry are quite small (6–19 persons).

Details of the ministry's sector policy, current development strategy and ten-year policy framework, plus their accelerated fisheries sector development plan for the Northern Province can be found on its Web site ([www.fisheries.gov.lk](http://www.fisheries.gov.lk)).

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<sup>15</sup> A clear distinction should be made between resource co-management and what is being addressed at FLCs, which is a sharing of responsibility between the government and communities to manage landing centres. This has been termed "asset co-management" by the author within the context of the project.

## BOX 2

**Vision, mission and objectives of the Ceylon Fishery Harbours Corporation**

**Vision:** To be the fundamental resource of the fisheries industry and the inspiration of the local fishing community while striving to become the top facilitator of the region's maritime enterprise.

**Mission:** To deliver superior quality of fishery harbour related services together with supporting infrastructure to provide all modern facilities to the fishing community, and achieve self-sustainability by upgrading the harbours through commercially viable ventures.

**Objectives:**

- Planning, designing and constructing fishery harbours, anchorages, marine structures and other shore facilities.
- Establishment, operation, administration and maintenance of fishery harbours, anchorages, marine structures and other shore facilities.
- Provision of repair and maintenance facilities for fishing vessels.
- Establishment, operation and maintenance of cold rooms, ice plants and other refrigeration facilities.
- Supply of water, fuel, lubricating oil, electricity, ice, cold-room facilities and any other incidental services to support the fishing industry.
- Provision of security services to fishery services, anchorages, marine structures and other organizations within the Ministry of Fisheries and Aquatic Resources Development, and recovering charges, fees and any other payment for such services.
- Monitoring, controlling and surveillance of Sri Lanka's Exclusive Economic Zone.
- Imposition and recovery of common harbour charges, fees, charges, boat registration fees such as harbour charges, lighthouse charges, dockage, tonnage and unloading fees for the facilities, services and supplies provided for fishing vessels, fishers any other parties within the fishery harbours and anchorages of the Ceylon Fishery Harbours Corporation.

*Source: Extracted from Banks et al (2007).*

**Ceylon Fishery Harbours Corporation (CFHC)**

The CFHC was established in 1972 and has a staff of 637 (2007 data). It is responsible for the construction, operation and management of all fishery harbours and anchorages. Its legal mandate also covers landing sites, as variously referred to in its vision, mission and objectives (Box 2). The establishment, operation, administration and maintenance of fishery harbours, anchorages, marine structures and other shore facilities is also a stated policy and strategic objective of the CFHC in its corporate plan.<sup>16</sup>

The need for increased capacity building of the CFHC was one of the issues highlighted in the MFARD ten-year plan, which stated the need to strengthen facilities of the CFHC for proper maintenance of harbours.<sup>17</sup> As the key counterpart to the project, the project's training plan (see Chapter 4) has attempted to address this issue.

However, in its present form, the CFHC does not have the operational resources to assist FLCs, as the human and technical capacities (and financial resources) of the CFHC are traditionally focused on the development and maintenance of the larger fishery harbours. Despite these limitations, there is however no other organization competent to handle the planning and engineering development work at FLCs. For this reason alone, the project was based at the CFHC.

<sup>16</sup> As stated in the CFHC Corporate Plan (2006, p. 73).

<sup>17</sup> MFARD 10-Year Development Policy Framework 2007–2016 – Problem/Issues #8.2.

The institutional analysis by FAO (Banks *et al.*, 2007) raised two important issues concerning the organization that remain valid to this day and must be addressed in the ministry's new strategic plan, namely that:

- The organization has (in the past) had to absorb new staff as a result of ministerial decrees and this has made it difficult for the organization to streamline its activities (and thus break even financially).
- The organization is top heavy in headquarters management, clerical staff and security; it would like to reduce staff numbers but is prevented from doing so by the ministry.

### ***Department of Fisheries and Aquatic Resources (DFAR)***

The DFAR is responsible for the management, regulation, conservation and development of fisheries and aquatic resources. The legal basis for DFAR activities is the Fisheries and Aquatic Resources Act No. 2 1996. It is responsible for the administration and enforcement of the Fisheries Act and the regulations. The DFAR has six divisions:

- finance, responsible for the DFAR's financial management and reporting to MFARD;
- administration;
- fisheries management (fisheries management, enforcement and legal);
- monitoring, control and surveillance (radio communications);
- quality control;
- fishing industries (Marine Engineering and Inspectors).

The DFAR cadre comprises 778 staff, 586 of whom are in post. The core functionaries for DFAR's activities relate to: fisheries inspection (167), acting as inspectors, welfare agents and extension officers, with 50 specifically responsible for statistical data collection; marine radio officers (38); marine engineers and surveyors (17); quality control officers (15); and economics, biological and legal specialists. In addition, the DFAR has 177 graduates that were (in 2010) allocated various job functions as fishery resource management assistants (FRMAs).

Although not originally identified as a key stakeholder and counterpart to the project, its involvement was pivotal to achieving the project's outcome and goal.

### ***National Aquatic Resources Research and Development Agency (NARA)***

This is the principal national institute charged with the responsibility for carrying out and coordinating research activities on aquatic resources. It is effectively the research arm of MFARD, providing scientific and technological expertise and advice for the development and management of the fishing sector. The NARA has a research staff of 117, of whom 50 are research officers with a further 36 research assistants. Its activities are organized into nine divisions. The organization is based in Colombo with four regional research centres. Its primary function and relationship with the I-FLCP was to support the implementation of the GIS database.

### **Gender issues and how these were addressed**

The project aimed from its very design to ensure that gender issues were addressed. Fisheries in Sri Lanka are a male-dominated activity, although a study conducted after the tsunami by the International Labour Organization (2005) indicated that 36 percent of women residing within the fishing community derived their income from fishing-related activities. Other studies have revealed that the role of women in Sri Lanka differs by region, dependent in part on the ethnicity and socio-economic status of specific fishing communities. For example, in Muslim fishing villages women are not involved in the fish trade at all (or in the FCS/RFO), whereas in other villages that are predominantly Christian and Buddhist, women are involved in beach seining, fish sorting and processing and fresh and dried fish marketing (and are members of their respective FCS/RFO). Data

from 2004 reveal the wide-ranging ethnic and religious diversity of fishing communities within Sri Lanka (Table 1).

TABLE 1  
**Religious ethnicity in fishing communities**

<b>Fisheries district</b>	<b>Active fishers</b>	<b>Buddhist</b>	<b>Hindu</b>	<b>Muslim</b>	<b>Christian</b>
	(2004 data)	(15%)	(21%)	(25%)	(38%)
Batticaloa	21 600	—	8 640	8 640	4 320
Colombo	2 800	280	—	560	1 960
Negombo	16 800	840	1 680	840	13 440
Galle	6 300	5 040	—	630	630
Tangalle	6 100	4 270	—	1 830	—
Kalutara	4 200	2 520	—	1 680	—
Kalmunai	15 500	775	3 875	7 750	3 100
Matara	7 100	5 680	—	1 420	—
Puttalam	12 100	—	1 210	5 445	5 445
Chilaw	10 000	—	1 000	1 000	8 000
Trincomalee	16 100	4 025	3 220	6 440	2 415
Mullaithivu	3 300	—	1 980	—	1 320
Kilinochchi	3 700	—	2 220	—	1 480
Jaffna	16 800	—	6 720	—	10 080
Mannar	9 400	—	1 880	1 880	5 640
	151 800	23 430	32 425	38 115	57 830

*Note:* According to the MFARD the number of active fishers in 2010 (full time, part-time and fisherwomen) was 221 000.

*Source:* S. Creech, personal communication.

Addressing gender equality issues was highlighted in the project M&E plan and specifically addressed in the TNA and preparation of the project's training plan. Gender-related data were collected as part of the needs assessment and environmental screening of landing sites. Gender issues were also addressed during preparation of the FLC business plans to ensure that women were represented in FLC management committees and received training and/or equipment specific to their role in the FCS/RFO.

The project provided in-plant training to a female student from the University of Peradeniya, and her degree research project focused on the role of women in managing fisheries cooperatives (targeting landing sites south of Colombo). The project sponsored three staff of the Government of Sri Lanka (one each from the MFARD, DFAR and CFHC) to do a master's degree, and the staff member from the MFARD is female.

Through the government capacity development activities of the project, 118 women have been trained compared with 604 men, equivalent to 16 percent of the total trained. More than 1 816 direct female beneficiaries were supported through the infrastructure component (see Appendix 2). One FLC was specifically designed and built to serve the needs of a women's association, at Vijithapura in Trincomalee, and four FLCs (Kotawanagala, Magana, Samudragama and Cheddipalam) with strong women's cooperative societies were targeted for specific support under the community participation capacity development component.

### 3. PLANNING INFRASTRUCTURE DEVELOPMENT

#### Landing site profiles and infrastructure development

Landing site profiles were completed as part of the needs assessment for all of the prioritized sites using the questionnaire provided on the accompanying CD-ROM. These profiles formed the basis for planning the infrastructure development in consultation with the communities and government officials. It was evident from the needs assessment that there were many FLCs located in remote fishing villages in the northwestern and eastern coastal districts of Sri Lanka that had not received any assistance whatsoever. Conversely, in the southern areas that were affected by the tsunami and later improved, many re-developed shore facilities remain largely underutilized. The reasons for this are complex; a multitude of donor and NGO-funded projects supported the sector immediately after the tsunami, and coordination problems between and among the developers and some government agencies, stakeholders and user groups were inevitable at this time. Other key issues that caused problems with the development of the landing site facilities included:

- the wrong choice of location selected for improvement;
- a lack of land, particularly public-owned land;
- low quality of civil works (i.e. poor supervision);
- the weak capacity of many of the organizations expected to manage the facilities constructed.

These were all valuable lessons to learn in the design and implementation of the I-FLCP.

The majority of the FLC community needs identified during the needs assessment related to community infrastructure and the capacity building for self-employment of youth and women. Some of the FLCs in the eastern and the northwestern fisheries districts were also affected by fishing effort restrictions, particularly in terms of fishing time and areas. These were imposed under the prevailing security situation in the country at the time. Therefore, alternative income-generating activities were considered of relevance in these locations. While it was noted that many fishing communities had previously received training in engine repair and cooperative management, the results of the needs assessment clearly demonstrated a need for further similar training activities. This “repeat” training typically represents part of the need for ongoing extension service support to such communities.

The removal of navigational obstructions and improvements to marine structures (breakwaters) to improve access to the sea and the berthing of vessels were also often highlighted as perceived needs, but they remained beyond the scope of the project, particularly in terms of environmental restrictions and budget. Other sites identified, if developed, would have led to environmental degradation through the loss of mangrove vegetation, such as Egodawatte-Kallukuliya in Chilaw. In two other places, use of the landing sites was highly seasonal and, as such, could not justify any development of shore facilities: Navalady in Trincomalee, where the existing facilities are not utilized, and Kudapaduwa in Negombo, where the boats are berthed in the lagoon during the off-fishing season. It should also be noted that while the I-FLCP refers to the “rehabilitation” of FLCs, very few FLCs were reformed, converted or renewed in reality; most FLC development was from new or involved significant improvements of existing FLCs.

The original mandate to work in all 15 districts, particularly with regard to infrastructure development, was considered to be an overambitious target from the outset; in the end, the project confined its infrastructure work to 13 districts. A total of 76 sites were profiled through the original needs assessment or at a later stage at the request of the Government. Following results from the environmental screening process plus a few cancelled site developments (primarily owing to a lack of commitment by the community), the project ended up with 41 infrastructure project sites grouped into 4 clusters located in 13 districts:

- Cluster 1: northwestern districts of Negombo (Gampaha), Puttalam and Chilaw – 12 sites;
- Cluster 2: eastern districts of Amapara, Batticaloa and Trincomalee – 9 sites;
- Cluster 3: southern districts of Colombo, Kalutara, Galle, Matara and Hambantota – 11 sites;

- Cluster 4: northern region covering the districts of Mannar, Mullaitivu and Trincomalee – 9 sites.

The location of these sites, along with the sites that were profiled but not developed, is illustrated in the traffic light database map (Appendix 1).

As discussed above, no two landing sites are the same in terms of their capacity and development needs. Therefore, it was important to adopt a flexible approach to the type of interventions provided, including the infrastructure component. Investment in physical assets must be appropriate to the realistic needs of the beneficiary communities, be built compliant with nationally appropriate building standards and codes, with international best practice in mind, and be in assets that can be managed on a sustainable basis. Buildings were also to be designed for use with natural ventilation and light as far as possible, i.e. without the need for air-conditioning.

The following is a list of infrastructure facilities that were provisionally considered for construction. No site received all of these facilities and, in most cases, an FLC only required some of the following investment (see Appendix 5 for a list of what was built at each FLC):

- construction of a net-mending hall: a ground floor concrete area with open access to the beach/shore, typically included within a community centre as the ground floor of a two-storey building;
- building of a community centre:<sup>18</sup> a multipurpose hall, with a capacity for seating 20–50 persons;
- construction of offices within the community centre for an FCS or local government official;
- installation of water supply and construction of toilet block;
- fish auction shed: a ground-floor open area with drainage and water supply;
- marine structures: this includes the erection of light beacons, wreck/obstacle removal, quay wall repairs or extension, building of slipways and installation of floating pontoons;<sup>19</sup>
- fencing of premises and construction of retaining walls;
- construction of a workshop/repair shop for day-to-day maintenance of boats and engines;
- erection of fuel storage tanks;
- construction of engine store sheds;
- feeder-road repairs/construction;
- ice storage and installation of ice-making facilities;
- construction of *wadies* (fish trading storerooms);
- construction of a nursery school to accommodate a maximum of 30 children, along with all necessary amenities and infrastructure facilities;
- fish market/sales outlets.

Profiling during the needs assessment revealed that the priority needs at most landing sites were: to improve facilities to land the fish, thereby improving the hygienic conditions relating to the handling and auctioning of fish; better storage facilities for ice and fish; offices for the CBOs and government staff; better security for fishing equipment and gear; and basic facilities to procure and/or maintain their fishing inputs. Access to utilities – electricity, water and sanitation – was a general priority.

### **The infrastructure planning process – steps and procedures followed**

The infrastructure development planning approach taken by the project was, with good justification, a lengthy process. Starting from the project inception, and to recap on the profiling and selection process

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<sup>18</sup> The project ultimately had to label these community centres officially as “Fisheries Service Centres” as Sri Lankan legislation requires that any building labelled with the word “community” be provided with wheelchair (disabled) access to all floors – a practical and financial impossibility at FLCs. However, the project did provide ramps for wheelchair access to all ground-floor facilities.

<sup>19</sup> Major marine works were not included within this project.

described above, the strategic planning steps taken and procedures followed were broadly as follows (with approximate time scales).<sup>20</sup>

***Scoping and prioritization phase<sup>21</sup> (12 months):***

1. Selection criteria for the prioritization of rehabilitation work were developed prior to and during the inception phase. Using these criteria and taking into account sites previously identified as a priority by the Government, the detailed needs assessment identified 50 FLCs for development.
2. The project was then left with a comprehensive database of selected sites for development in initially 9 districts (later to be expanded to 13), which were then subjected to environmental screening.
3. The results from this screening were then used to validate approval of a specific site for development and to complete the CCD planning application form where this was necessary, namely, for a building permit in the buffer zone. This planning application procedure, which often took months to complete, was typically running in parallel with the practical implementation of the works contracts.
4. Site selection was prioritized, managed and monitored throughout the whole project cycle using a simple and flexible “traffic light” system.
5. The project did not have the capacity to implement works in all nine districts simultaneously. Therefore, a decision was needed early on about where the project should start first, which districts, and how many.
6. With the endorsement of the Government, the project rationalized the implementation of works contracts using a cluster approach, allowing the project to speed up the tendering process and provide economies of scale in use of project management time and expenditure.<sup>22</sup> It also facilitated the quality assurance of the infrastructure built and M&E of project activities.
7. Batticaloa District on the east coast was chosen, initially with four FLCs identified for assistance, because it had received less post-tsunami development assistance than other districts. However, security was an issue in this district at the time the project started.
8. Puttalam District in the northwest, initially with eight FLCs identified for assistance, although not severely impacted by the tsunami, has important fisheries, and of all the districts outside the conflict zone on the west coast, this was the least developed. Security was also not a major issue in this district.
9. Two further clusters, one in the south/southwest covering five districts and another cluster (post-conflict) in the north (two districts only), were subsequently implemented in a phased approach.
10. The project finally had to agree on the contractor contract strategy, including issues such as the need to prequalify consultants and execution of the infrastructure works in clustered stages.
11. Once the prioritization process was complete, the project requested proposals for and contracted the design and supervision consulting engineer (D&S engineer).<sup>23</sup>

<sup>20</sup> Some of these steps were undertaken in parallel. The first step, scoping and prioritization, was unusually long for various reasons beyond the control of the I-FLCP and should have been completed in 6–8 months.

<sup>21</sup> Much of the planning process in this phase was discussed in Chapter 2 (needs assessment and environmental screening).

<sup>22</sup> Procurement rules would have also made it prohibitively costly and almost unworkable in supervision terms to engage separate contractors for each and every site. This was an issue raised in the internal evaluation (GreenTech, 2011) and, with the benefit of hindsight, perhaps for some of the smaller works using a reliable and financially solvent local (smaller) contractor may have performed better.

<sup>23</sup> The design and supervision (D&S) work was contracted out to a single private sector contractor, with the I-FLCP effectively acting as the engineering supervisor of supervisor, as the CFHC lacked the capacity to undertake this work. An alternative project implementation model would have been to separate the D&S. There are pros and cons with each approach, but a detailed discussion of them lies beyond the scope of this document.

***Schematic design phase (two months):***

1. Time scales and financial limits were discussed with the D&S engineer, and field visits were completed to investigate site conditions and constraints and consult with stakeholders.
2. Study of the statutory requirements and, if necessary, consultation with local authorities such as the urban development authority, municipal and/or provincial councils. There was a need also to consult with local authorities and statutory bodies to obtain outline-planning consent, in addition to CCD approval as discussed above.
3. The D&S engineer prepared a fully developed brief with outline proposals, design criteria and rough approximate construction cost for approval by the project.
4. The project reviewed this brief and reached a decision on the outline proposal and approximate construction cost, and, if necessary, amended and/or suggested alternative proposals, arriving at an approved revised approximate construction cost.<sup>24</sup>
5. Once the design criteria and concepts were agreed upon,<sup>25</sup> the schematic design was developed by the D&S engineer based on the approved outline proposal. A more precise estimated approximate construction cost was prepared for approval by the project.
6. Agree possible commencement and completion dates for the construction programme (for each and every site based on the cluster approach) and review the cost implications of any subsequent changes and/or delays to the construction programme.
7. Finally, the project reviewed the programme for D&S engineer consultancy services.

***Design development phase (one month):***

1. Approval of the type of construction, quality of materials, schedule of finishes and standard of work, as proposed by the D&S engineer.
2. The D&S engineer then prepared the total cost estimate (TCE) for the project inclusive of all connected services and external works with allowance for contingencies and price escalations.<sup>26</sup>
3. The project then had to approve the TCE in line with the fully developed brief, outline specifications and schematic design.
4. Agree and plan probable cash flow for the execution of the works, and, based on the TCE, agree on the consequences of any subsequent changes to the cost and construction programme.
5. The D&S engineer prepared drawings and other documents for submission by the project to obtain approval from local authorities and other statutory bodies (also linked to the environmental screening and CCD planning approval process discussed above).
6. Layout plans approved and signed off by a representative of the beneficiary community.<sup>27</sup>

***Construction document phase (one to two months):***

1. Once the contract strategy was agreed and finalized, in particular how contractors are to be shortlisted to bid for the work,<sup>28</sup> the D&S engineer prepared the architectural, structural and other engineering services working drawings.
2. These drawings were then submitted to the I-FLCP for checking and approval.
3. Based on the approved drawings, the bills of quantities (BOQs) and technical specifications for materials and standard of work were prepared by the D&S engineer.

<sup>24</sup> See also Chapter 6 for more discussion on how the project assessed the relative cost–benefit of proposed investments.

<sup>25</sup> One typical example of design criteria concerns the issue of roofing material. United Nations procurement rules prohibited the use of asbestos sheeting. This has resulted in an average increase of 52 percent in the roofing cost for an FLC design (LKR 1.6 million using tiles compared with LKR 1.05 million using asbestos sheets; based on 2009 prices).

<sup>26</sup> The Government of Sri Lanka has financial regulations concerning such issues, contained within the financial regulations of the Institute for Construction Training and Development (ICTAD).

<sup>27</sup> This is a crucial step as it documents a commitment by the community to the infrastructure planning process.

<sup>28</sup> This could for example be from a preregistered and approved list held by the government/development agency or it may require a separate request for expressions of interest from contractors.

4. At the same time, all the relevant data to prepare a draft bidding document were collected and collated, in line with FAO procurement procedures.
5. Preparation by the D&S engineer of a firm (final) total cost estimate (FTCE) based on a fully priced BOQ.
6. If there is a variation in the FTCE from the previously approved TCE, then approval may need to be given before proceeding further.
7. The D&S engineer can then submit a fully priced BOQ under sealed cover, ensuring that it remains confidential to outside contractors.
8. The draft bidding document was then completed by the D&S engineer and submitted to the project (in this case also contracts and procurement staff in FAO Rome) for review, revision as necessary and approval. The I-FLCP was now ready to launch the bidding process for each works contract.

***Bidding phase (one month but may be longer if evaluation process is not straightforward):***

1. Issue bidding documents to shortlisted contractors.
2. Arrange and conduct pre-bid meetings with shortlisted contractors, prepare meeting minutes and respond to any technical or contractual queries.
3. Receipt of contractors bid documents and convene a technical evaluation committee to evaluate the bids received.
4. Preparation of the bid evaluation report and select preferred contractor. Negotiate terms and conditions of the contract with the preferred contractor as necessary and relevant.<sup>29</sup>
5. Inform the other bidders of the result of bid.

Prepare the letter of acceptance for issue to the preferred bidder and prepare the contract documents for signature between all relevant parties to the contract.

***Construction supervision phase (six months but may be longer):***

1. Explain the construction programme to the local fishing community, government officials and other stakeholders and seek agreement for hand-over of the construction site to commence work.
2. Employment of adequate site supervisory staff by the D&S engineer.
3. Ongoing and regular supervision of construction work to monitor quality and progress of work, including meeting regularly with the stakeholders (fishing community) to provide an opportunity for feedback on the progress of the works.
4. Conduct fortnightly (every two weeks) progress review meetings at site (one site chosen within a cluster) or at the project office, and prepare minutes of each meeting.
5. Approve all materials used in the construction work, based on samples received from the contractor.
6. Measure work and certify interim claims for payment by the contractor in the format required by the relevant funding or implementing agency.
7. Value any extra works and variations to the existing works contract and obtain prior approval as necessary before execution.
8. Preparation of monthly operational summary and financial statement of works by the D&S engineer.
9. Monitor the cost of construction of works against the FTCE and agree any necessary changes in the budget.
10. Monitor the timeline progress of construction and agree any time extensions and changes to the planned completion date.
11. Carry out defect surveys upon practical completion and notify the contractor regarding rectification. Carry out final inspection after rectification of defects and issue practical completion certificate.

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<sup>29</sup> In the case of FAO works contracts, there is usually very limited scope for negotiation.

12. Assist the fishing community to take over the completed works, including the preparation of maintenance manuals for services and equipment as appropriate.<sup>30</sup>
13. The D&S engineer and supervising project engineer to measure the completed works and issue certificate of payment on practical completion. Submit a financial statement of work at completion to allow payment of the contractor's final account bill.

***Post-construction phase (six months following the practical completion of works):<sup>31</sup>***

1. Check that the maintenance manuals for services and equipment remain in use.
2. Prepare and submit maintenance programme and make recommendations for service agreements for services and equipment, if relevant.
3. Review warranties and guarantees and transfer them as required to the stakeholders.
4. Inspect the works during the defect liability period, usually six months after practical completion, and discuss outstanding issues with the stakeholders.
5. Prepare a list of defects and notify the contractor(s) to rectify such defects.
6. Inspect the defect works again following rectification by the contractor(s).
7. Issue maintenance certificate and final certificate releasing retention payments to the contractor(s) and D&S engineer.

### **The Coast Conservation Department permit process**

The importance of environmental screening in relation to the CCD planning approval was discussed in Chapter 2. For development activities within the coastal zone, a permit issued by the director of the CCD, referred to as a major permit, or a permit issued by the divisional secretary on behalf of the director, referred to as a minor permit, was required. The difference in the type of permit issued depends on the development activity; in the case of FLC development, all of the applicable sites required major permits. The standard permit application form requests basic information such as:

- the applicant's name and postal address;
- the location of the project and nature of the project;
- a statement of coastal erosion in the coastal reach of the proposed location;
- present land use;
- details of other agency approval obtained.

Applications had to be submitted with the following supporting documents: three certified copies of survey plans of the proposed site prepared within five years prior to the date of application; three copies of building plans certified by the architect, including floor area; and, proof of payment of the specified permit fee.<sup>32</sup> Approval for development activities related to fisheries buildings and infrastructure within the buffer zone includes the following:

- storage facilities for fishing gear and other equipment;
- construction of temporary huts for storage of beach seine nets and craft;
- facilities for ice production, storage and distribution;
- facilities for seawater intakes and purification systems for aquaculture;
- facilities for fish auction;
- non-residential facilities for fisheries harbours, anchorages and landing sites.

Applications that raised concerns about their relevance and/or compliance with the legislation would have been required to undertake a full environmental impact assessment (EIA). In the case of the sites

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<sup>30</sup> This also involved the need for training inputs.

<sup>31</sup> This phase was essentially completed post-project.

<sup>32</sup> The CCD frequently commented to the project's concerns about the lengthy approval process that the project should have involved the CCD earlier in the FLC development planning process. However, the application process as described precludes the formal involvement of CCD without the necessary survey and building plans.

developed by the I-FLCP, this was not necessary except for one site, which required an environmental assessment (see Box 3).

### **The preparation of drawings and bill of quantities**

The project amassed an enormous database of information across the 41 landing sites that were developed. In total, 930 technical drawings – an average of more than 22 per site – and an estimated 1 159 pages of BOQ were prepared by the D&S engineer and his team, and reviewed and approved by the project staff throughout the lifetime of the project. In addition, thousands of photos were taken on a total of 127 field visits completed by project staff to record the development process from initial screening through construction to capacity development of the communities and the official opening; equivalent to each site being visited by project staff between 15 and 20 times. It remains beyond the scope of this report to document all of the drawings for the wide variety of infrastructure provided. However, as an illustration of what is typically required for the construction of one site – using as an example a two-storey fisheries service centre (FSC) – the following drawings were prepared:

- architectural drawings:
  - layout plan,
  - setting-out plan (ground floor and first floor),
  - ground floor and first floor plan,
  - front, side and rear elevations,
  - cross-sections (typically two transverse and two longitudinal sections through the building),
  - door and window details (for every door and window in the building),
  - toilet details (ground floor and first floor),
  - staircase details,
  - overhead water-tank details (if fitted),
  - gate and fencing details (if fitted);
- structural drawings:
  - for a two-storey FSC, this required three drawings;
- plumbing drawings:
  - water supply and drainage layout plan,
  - water supply and drainage – ground floor and first floor,
  - water supply and drainage – standard details,
- electrical drawings:
  - for a two-storey FSC, this required six drawings (showing the layout of electrical ring-main circuits on each floor and position of lights, sockets and fuse box).

Included in the accompanying CD-ROM is a database of drawings (layout plans), arranged by project cluster (see above) for a variety of infrastructure built by the project. Appendix 5 also provides a comprehensive list of the infrastructure assets provided by the project.

### **Tendering and contracting of contractors**

The tendering process for contractors, both for the D&S engineer and works contracts, has been explained above. The form of the tender documents used in all cases was the industry standard used in Sri Lanka, prepared by the Institute for Construction Training and Development (ICTAD).<sup>33</sup> The ICTAD standards were found to be compliant with international standards as laid down by the International Federation of Consulting Engineers, which represents the consulting engineering industry globally. This federation promotes the business interest of firms supplying technology-based

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<sup>33</sup> These were modified as necessary to be compliant with FAO procedures.

intellectual services for the built and natural environment and as such promotes best business practice in international contracts and agreements. As a result the form of contract used has been tried and tested throughout many countries over many years.

It is beyond the scope of this document to describe the content of these tender documents in detail, but it is important to note that for works contracts the form of the tender document comprised the following three volumes:

- Volume I
  - Form of tender and appendix
  - Information and instructions to tenderers and conditions of tender
  - Form of agreement
  - General conditions of contract
  - Conditions of particular applications
  - Format of bank guarantees
  - Bid bond
  - Performance bond
  - Format of certificates
  - Certificate of completion
  - Maintenance certificate
  - General specifications
  - Particular specifications
  - Schedule of finishes
  - List of drawings
- Volume II (separately bound)
  - Pricing preamble
  - Bill of quantities
- Volume III (separately bound)
  - Tender drawings

#### ***The benefits and disadvantages of the cluster approach***

The project's clustering approach to contracting significantly reduced the contract management and administrative demands on the PMU by reducing the number of contracts from 41 to 4 clustered contracts. In addition, the higher value of the clustered contracts (between USD485 000 and USD1 080 000 in value) enabled the project to engage larger and more highly qualified and experienced ICTAD-registered national construction companies. Despite choosing these larger contractors (the four clustered contracts were awarded to three different contractors), the project faced many challenges in the implementation of the works contract, including but not limited to:

- Severely protracted delays in completion – this was only in part because of seasonally high rainfall in late 2009, which caused local flooding and affected the availability of building sand.
- Cash-flow problems for one contractor because of poor quantity surveying and invoicing.
- Resistance by some individuals within the community to the building work, which resulted in several cases to the project cancelling or radically changing the design of the proposed structure.
- A reversal of prior verbal planning approval by the CCD, which resulted in one site being cancelled after groundwork had started and changes in the design of another FSC from a two-storey building to one-storey.
- Contractors not providing enough labour (particularly skilled) at each site so that work was delayed.

- Two of the three contractors employed locally based unskilled labour – there were many instances where this labour failed to work continuously with poor labour management and on-site supervision.
- Delays caused by FAO payment procedures, particularly when significant stage payments were required by contractors towards the end of the project.
- Complex logistics working in the north of the country, where all truck/lorry movements were very strictly controlled by the military for security reasons.
- Limited supply of building bricks competing with government-run projects because of the rapid development in the north of the country post-conflict.
- Poor quality assurance resulting in some work already completed that had to be re-done.

The drawback to the project strategy of “clustering” is that it took longer to commission the contract work, as all of the design and BOQ work had to be prepared for every site in the cluster before the project was able to request a bid from contractors. In addition, this approach and the size of the contracts precluded smaller locally based contractors from bidding.

The project’s overall experience is that only in exceptional cases was there the capacity among smaller contractors to implement works contracts on a site-by-site basis to the standards demanded by FAO. Nevertheless where it was possible, i.e. where good local contractors existed, the project could have explored such options, even if such a strategy is likely to have been extremely demanding in terms of additional supervision. This issue is discussed further with a case-study example in Chapter 6 (comparison of infrastructure investments costs).

### ***The importance of supervision***

The construction supervision role of the D&S engineer was described above. While the infrastructure was not complex to design or construct (as simple single-storey and two-storey buildings, usually with adequate access to site), it was however logically complex. Three contractors were working at a total of 41 sites in 13 different districts around the coast of Sri Lanka; some sites took 24 hours to reach by car, and, in the early stages of the fourth contract focusing on sites in the north of the country, access to the area was strictly controlled for security reasons.

Adequate and continual supervision was essential in an attempt to ensure project completion on time, within budget and to the quality standards demanded. The contractors were an important project stakeholder and, as such, briefed on the wider objectives of the project in terms of fishing community participation. However, their relationship with the “client”, namely the project, was very conventional and they were to a large extent oblivious to the wider development context of the project. This viewpoint affected the post-construction phase of the project, as without completed buildings some of the other development activities were not possible, and the impact of these activities consequently impossible to measure.

What should be considered when preparing a supervision contract in order that the supervision role can be promoted as a positive developmental experience? Based on the experiences of the project, important issues to consider include:

- comprehensive terms of reference for the supervisor(s);
- reporting procedures and format;
- policy regarding confidentiality: who is the person doing the supervision reporting to;
- qualifications of the supervisor(s);
- frequency of supervision visits and how this is monitored, for example, through signing attendance sheets at each project site;

- whether the beneficiaries, i.e. fishing communities, should be actively involved in supervision;<sup>34</sup>
- whether the government should be actively involved in supervision?
- how issues that are outside the competence of the supervisor, particularly if a project includes supervision by the fishing community or unqualified government officials, will be handled and by whom;
- mechanisms for addressing problems with the supervisor(s) and reviewing, renegotiating or terminating the supervision contract;
- how the effectiveness of supervision will be measured/evaluated.

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<sup>34</sup> The project witnessed at several FLCs an active role being taken by the fishing community in the supervision of “their” works contract. This role could have been formalized but was not. This occasionally led to conflicts between the contractors, fishing communities and the D&S engineer’s supervision team.

#### 4. PARTICIPATION, LIVELIHOODS AND CAPACITY DEVELOPMENT

##### Who participates, when and how?

Participation was at the core of the project, referred to in the project title, outcome and outputs. Maximizing transparency, a sense of ownership and participation in the development planning process and project implementation by the key stakeholders was an important strategy to achieving the principal outcome of the project, i.e. that the landing centres should be functionally self-sustaining. Implicit in this outcome was that the project's exit strategy regarding the handing over of the completed FLCs was clearly defined at the start of the project rather than being addressed, as is often the case, towards the latter half of the project.

The theory and research behind the reasons for an interest in and importance of participation in the development process are well documented by Campbell and Salagrama (2001). What are of more relevance in this paper are the practical steps that were taken to operationalize participation. As stated in the project document (FAO, 2008), one of the lessons learned in the development of landing centres in the past has been that, while it is relatively easy to identify the needs for small village-level infrastructure, the challenging task is the proper management and maintenance of the facilities postproject and to provide users with the services they require.

The project embraced a wide range of direct and indirect stakeholders – national and local government officials, fishers, traders, boat owners and their families. The project estimated that at the landing sites included in the clustered works contract sites in the northwest, east and south, the project had a target stakeholder audience of some 10 165 fisher families. Including the IDP-related activities in the north of the country, which commenced later on in the project, the total number of direct and indirect beneficiaries of the project was estimated at 15 350, of whom more than 10 percent were women.<sup>35</sup>

Participation was encouraged from the outset through the selection of a number of FLCs based on the recommendations of the DFAR and CFHC. Community participation was encouraged as an integral part of the needs assessment, which involved field investigations and interviews with fishing communities and the field staff of the DFAR. Participation was operationalized by implementing a comprehensive training plan for government stakeholders and a capacity development programme for the fishing communities. The objective was to create informed stakeholders who were better able to:

- understand the importance of participation;
- judge for themselves whether project interventions were relevant to their interests;
- select their own trained representatives and help identify further stakeholders;
- understand and accept compromise or consensus positions;
- provide information on fishing community institutions, attitudes and perceptions;
- understand relevant regulations related to landing site development and their responsibilities in taking ownership.

Key stakeholders are all those that are affected by the outcome of the project, either directly or indirectly. While this “affect” can be either positive or negative, it should be acknowledged that key stakeholders may not always have known how the project would affect them. Box 3 provides an illustrative case study of such a situation faced by the project.

In addressing this issue, the project needed to first identify and then actively engage with the stakeholders through both the delivery of training and providing information. As discussed in Chapter 2, identification of the primary and secondary (direct and indirect) stakeholders started during the project design phase and was validated during the needs assessment.

The key government institutional stakeholder linking the project's activities to the fishing community at the village level was the district-based DFAR staff. Therefore, close linkages were established early

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<sup>35</sup> All of these figures are based on estimates from the baseline environmental surveys completed by the project.

on with the DFAR, although as stated above, they were not originally identified as a key government stakeholder in the project outcome.

Fishing communities often place a high priority on having their own facilities so that they perceive that they do not have to rely on outsiders. This typically may include ice-making machines and fuel stores. The project in general discouraged such investments because of the high operating costs. In addition, in most cases except for the remotest locations, no FLC is more than 10–15 miles (16–24 km) from the nearest CFHC-run fishing port, which is already geared up to provide such services.

**BOX 3**

**The Kirillagahawatte fish landing centre**

A needs assessment was carried out in November 2008 at the Kirillagahawatte fish landing centre in Katunayake in consultation with the staff of the Department of Fisheries and Aquatic Resources (DFAR) and the community beneficiaries (key stakeholders). The original identified need was for the project to build a fisheries service centre. After preparation and presentation of the designs (which was completed by the end of 2009), the community changed its request to a need for a 350 m gabion wall to arrest erosion along its lagoon front. This decision was agreed to at a meeting held with the Secretary of the Ministry of Fisheries and Aquatic Resources Development in March 2010 and the Assistant Director of Fisheries in Negombo. At a subsequent site visit undertaken by project staff and the design and supervision (D&S) engineer, this new investment was re-confirmed as a priority of the community.

With a change in the community leadership after this date and subsequent community consultations, it was revealed that as the majority of the boats consisted of theppams (simple 2–3 m wooden or fibreglass rafts with no engines), the fishers would have difficulty in berthing boats on land across a gabion wall. Neither did the community want to keep the theppams in the water. Hence, the community requested platform-type jetties to berth their boats in five existing locations. An escalation of the original cost estimate meant that the project had to limit the number of jetties – of sufficient length that could still accommodate 80 theppams. Accordingly, the project, after obtaining acceptance from the community leaders for the design of the three platform type jetties, organized and paid for an environmental assessment plus soil testing, both a prerequisite for this kind of development; a combined investment of almost LKR1.0 million. At no time was any objection raised to, or changes proposed by, the community to the agreed plan. On the basis of the results of the studies, construction work was included within one of the project's clustered works contracts awarded in early March 2011.

On mobilization of the contractor to start work in late March 2011, there was a disagreement raised by some sections of the community about the final design of the three jetties, claiming that the structures could not accommodate 80 *theppams*. The contractor was therefore forced to cease work at the site. The project organized another consultation meeting with the D&S engineer, DFAR officers and the community group to explain the design previously agreed upon. The community subsequently wanted to change the design again to two longer jetties, which the project estimated would cost LKR 11 million, compared with a budget of LKR 6.1 million for the previously agreed three smaller jetties. As the project had neither the budget to fund or time to re-design something that had previously been agreed with the community, the project took the decision to terminate all the development work at this site.

**The sustainable livelihoods approach**

A key output of the project was building the capacity of government and CBOs to manage the FLCs effectively. Participatory approaches were used during the needs assessment to ensure that communities and other partners were fully engaged in the processes of selection, design and monitoring of construction of facilities. Capacity development of CBOs was essential so that they are capable of managing these facilities, thus contributing to their long-term sustainability.

The challenge for the I-FLCP in supporting fisheries development in Sri Lanka was complex and ever-changing and required a spectrum of approaches that tackled the immediate needs and future potential of fisheries communities (Cattermoul, Townsley and Campbell, 2010). These approaches needed to be set in a holistic perspective that was inclusive of the wide diversity of people in coastal communities and that linked the local realities of their livelihoods with the broader service delivery, policy and institutional context. The sustainable livelihoods approach (SLA) provided a framework and principles to do this.

Following some prior training for government officials in social mobilization that addressed the obstacles faced in the development of fishing communities, the project subsequently implemented an SLA training programme. One of the outputs of this training was an extension manual.<sup>36</sup> Equipped with their training and the extension manual, it was foreseen that DFAR staff would be better able to support many of the community-level activities, in turn assisted with support from mentors and facilitators. A TOT approach was adopted given the geographic scope of the project and the significant target beneficiary of 10 165 fisher families referred to above.

Parallel to the delivery of SLA training, training in sustainable livelihoods enhancement and diversification (SLED) was provided to a core group of project staff and consultants who ultimately acted as the SLA mentors and facilitators. The SLED approach was developed by the project consultants building on lessons learned from previous SLA work (including in Sri Lanka) and is an important new concept recommended in the context of improving management of coastal and marine resources in Sri Lanka.

### **Training of government staff**

Creating awareness among fishing communities of the need to participate in operating and managing FLCs, and then creating the capacity within the communities to participate in the management process, was the most significant challenge faced by the project. The enhanced capacity of MFARD, DFAR and CFHC staff was considered a prerequisite for FLC community development, as the staff from all three organizations was involved in the mobilization of these communities and/or technically supporting the landing site development process. As discussed in Chapter 2, the approach taken was essentially in two phases, starting with the capacity development of government staff across a wide range of disciplines, and then through a TOT approach using the government staff to help build capacity within the communities. A well-defined TNA and training plan were therefore essential given the number of people to be trained, the diverse range of subjects to be covered, the fact that the project operated nationwide, and the limited two-year operational time frame.

### ***Training needs assessment***

The objective of the TNA was to determine the need for capacity development of the MFARD, DFAR and CFHC staff so that they could contribute to improving the knowledge, skills and attitudes of stakeholders in relation to the sustainable management of FLCs, and in so doing develop their livelihoods and improve living standards.

Following a preliminary documentary analysis of project-related documents and initial exploratory discussions with senior government officials regarding their training requirements, a TNA questionnaire was prepared.<sup>37</sup> A total of 425 questionnaires were circulated to a potential target audience of 504 staff in the MFARD, CFHC and DFAR. A total of 345 questionnaires were completed and returned; a high response rate of 81 percent. These questionnaires were analysed to provide details of the job functions of those questioned, details of existing qualifications, gender structure and age.

<sup>36</sup> This manual is included in the accompanying CD-ROM. Two international consultants were recruited in mid-2010 to conduct three SLA courses (each for three days for a total of 90 district-based staff) and one six-day Sustainable Livelihoods Enhancement and Diversification (SLED) workshop for trainers (project staff and consultants). The techniques learned were then applied in the implementation of a number of CBO capacity development activities.

<sup>37</sup> Included in the accompanying CD-ROM

The ultimate purpose of the TNA was to ascertain the skills and competency gaps and, through this, the training and development needs.

### ***Conceptual approach to training***

The contemporary human resource development (HRD) approach to training has changed in recent years. To keep pace with changes in the working environment and meet the emerging challenges of organizational success demanded by the Government, the project was mindful that its training delivery had to focus on organizational needs. Training activities needed to be results-oriented and aligned to organizational goals and success. In order to match these expectations, the project attempted in its training and HRD plan to take account of the following:

- linking the training strategy with defined institutional strategies and objectives;
- promoting the link between training and individual performance evaluation;
- linking training with and supporting the development of proper job descriptions and job specifications;
- ensuring that training promotes the adoption of best practices;
- ensuring that training is built on the knowledge society concept in order to move employees towards a learning organization;
- ensuring that training was based on three objective areas – knowledge, skills and attitudes – to lead to better performance;
- Focusing the attention of training on three basic skill requirements: technical skills, human relation skills, and managerial skills.

### ***Selection of trainees***

Training of the entire staff of all three organizations was not practically possible and had to be delivered for selected participants only. The project played no part in this selection process, other than stipulating specific entry requirements for some courses, such as for example, staff working in a specific line ministry department related to the training subject, the need to be able to communicate in the English language (an important issue when using trainers from overseas) or the need to have completed prior training courses. Therefore, the selection process was invariably decided by the MFARD, DFAR and CFHC.

### ***Delivery of the government officer training plan***

The results of the TNA were used to prepare a plan that initially consisted of 36 proposed courses classified into 5 main components, the main features of which were:

- Training component 1 – planning, monitoring and evaluation:
  - provided an overview of the co-management planning process, outlining the complimentary roles of sector study, policy, strategy and plan,
  - engaged key stakeholders in the implementation of the fisheries strategy,
  - provided training for 30 MFARD staff,
  - included M&E systems, fishery statistics/sampling methods and data analysis;
- Training component 2 – management of CBOs:
  - participatory management, social mobilization, livelihoods development (SLA), and entrepreneurship development training for 90 fisheries staff;
- Training component 3 – harbour engineering and contract management:
  - provided specialist training for 104 employees of CFHC including engineering, technical and harbour management staff;
- Training component 4 – general courses:

- provided training courses in the English and Tamil languages, basic information technology and computer application and awareness on general fishery subjects and public financial management, including to office, accounting and field staff;
- Training component 5 – specialist courses:
  - included selected senior staff of MFAR, DFAR and CFHC, and a few project staff,
  - supported the establishment of a cadre of trainers through a TOT programme,
  - provided specialist technical training in MIKE 21,<sup>38</sup> organization development (job descriptions and improving employee performance) and included short-term overseas study tours.

A standardized system of training evaluation was used after each course to help inform the project about the performance of its training staff and consultants. A total of 37 repeat courses (one more than was in the original plan) covering 24 distinct subject areas were delivered to a total of 856 participants across the three institutions. Some of the courses originally planned had to be cancelled, merged with other courses or delivered under the second phase of the training plan (capacity development of the fishing communities). Appendix 6 provides a database of the government officer training courses and workshops delivered by the project.

### **CFHC capacity development**

One of the stated outputs of the I-FLCP was the establishment of a staffed operational FLC development unit within the CFHC. The original concept of establishing this unit was not just to focus on engineering design work, but also to provide a more strategic planning approach for the ministry to the development of fisheries infrastructure nationwide, including harbours, anchorages as well as FLCs. The logic was that this unit should have the capacity to address cost–benefit economic, environmental, social and physical (spatial) planning issues as well as the more typical technical (engineering) issues.

However, when the project became fully operational (May 2009), there were only two resident engineers at the CFHC office in Colombo, so there was limited capacity to establish this new unit or to contribute significantly to the ongoing activity of FLC design and development. Therefore, the project included in its training plan the training of five engineers in coastal engineering and use of specialist engineering software, and supported the CFHC with a wide variety of training courses to help build capacity. Despite assurances that a design unit could be established within the CFHC Project Implementation Unit (PIU), the necessary resources were never allocated by the Government and the project continued to function as the FLC design unit.

### ***Role of the CFHC in supporting landing sites***

The CFHC currently operates 16 fishing harbours, another 3 will be fully operational by the end of 2012, and a further 11–12 are planned for construction over the next five years. This is a significant plan for expansion, and the CFHC needs to ensure it has the capacity to manage all of these new assets. Until recently, the existing revenue from the fishing harbours, primarily from berthing charges, rental of buildings, harbour access (gate pass) fees and charging for utilities (water, fuel and ice),<sup>39</sup> did not meet the cost of their operation.

While successful efforts have been initiated by the MFARD to reduce the shortfall in income, considerable demands continue to be placed on the CFHC senior management and harbour managers to reduce costs and increase revenue, including through diversified activities such as tourism, dredging services and the selling of sand. Therefore, the CFHC cannot afford to, nor should it be expected to, subsidize any business activity related to the FLCs given that landing centres are by definition small

<sup>38</sup> MIKE 21 is the name given to the software developed by the Danish Hydraulics Institute for water modelling.

<sup>39</sup> The CFHC reportedly does not currently charge a handling fee for fish but this will change with the introduction of weigh-bridges at some ports (as reported in the CFHC Corporate Plan [2006]).

(and therefore the demand for services is limited), do not generate significant revenue and may be located up to 24 km from a CFHC-run fishing harbour.

Currently, the CFHC does not take any active role in the construction or management of FLCs.<sup>40</sup> Although the policy mandate for such work resides with the CFHC, the DFAR is the only institution with the outreach, despite its own budgetary shortcomings, to deal with FLC development and management; hence, the reason why the project worked closely with DFAR staff to build their capacity.

### ***FLC development and the role of the CFHC***

The CFHC has an important national role to play in coordinating the management of fisheries infrastructure development. However, the CFHC should not take over or manage FLCs – these assets must remain in the hands of the fishing community, supported and overseen by the DFAR. This is in line with the principles of asset co-management.

Included in its new corporate strategy, currently being prepared as part of the MFARD's ongoing development of a strategic management system, the CFHC should strengthen the PIU to expand its operations to include support to landing sites. At the same time, the CFHC should explore linkages to the tourism industry through various local initiatives in conjunction with hotel operators and local stakeholders. This initiative should be budgeted for through additional development funding from the Government and should not be an investment or an activity subsidized by the CFHC. At the same time, the CFHC should explore opportunities for developing financially sustainable business links with key FLCs that request support, such as for the supply of ice and fuel in bulk or assistance with the distribution of fish. This coordinating activity could be implemented at minimal cost to the CFHC using existing resources, given that the PIU and the fishing harbours are all functioning.

### **Study tours and lessons learned**

The government training programme included international exposure to best practice, organized through fishing port management study tours to India and the Philippines.

#### ***India***

The study tour to India was to participate in the final workshop of the FAO Technical Cooperation Project on Capacity Building in Support of Cleaner Fishing Harbours in India (TCP/IND/3102 A), which was conceived following the recommendations of the Chennai Declaration on Cleaner Fishery Harbours and Seafood Quality Assurance (Bay of Bengal Programme, 2000). The findings, lessons and experiences from the project (Siar *et al.*, 2011) were discussed and shared in the final workshop, highlighted by a working group session where the participants discussed and formulated recommendations relating to:

- effective participation of stakeholders in the management of the fishing harbour;
- achieving financial sustainability in the management of fishing harbours;
- maintenance of hygiene and cleanliness and prevention of pollution in the fishing harbour.

#### ***The Philippines***

The study tours to the Philippines were organized for two groups to attend fishing port management training courses, one in February 2011 and the other in July 2011. A brief study tour for senior government officials was also organized in July 2011. The courses/study tours were hosted by the General Santos Fish Port Complex (GSFPC) on Mindanao in the south of the country.

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<sup>40</sup> However, the CFHC is involved with the United Nations Office for Project Services (UNOPS) in implementing an FLC development programme funded under the International Fund for Agricultural Development (IFAD).

The objective of the fishing port management course was to provide some theoretical and practical exposure to all aspects of port and market operation including the methods, practices and standards relating to food safety and proper sanitation. The focus was on good management practice (GMP) and Standard Operating Procedures (SOPs) that the participants can then take back and apply in CFHC ports and landing sites in Sri Lanka. Involving a large number of GSFPC staff, the course provided an opportunity for all concerned to witness the day-to-day management of a profitable port. The subjects covered included:

- orientation on procedures of fishing port operations administrative matters (food safety, information technology, identification system and port security);
- harbour and market operations and financial management for a harbour dealing with export oriented hand-line fishery, purse seiner landings (for tuna cannery) and reefer vessels;
- harbour and market operations for a harbour specializing in the long-line fishery (at Davao Fish Port Complex);
- food safety GMP sanitation standard operating procedures (SSOPs).
- Some of the important lessons learned and recommendations from this study tour include:
- Developing efficient port operations takes time; when the GSFPC first became operational in the late 1990s, it was dealing with 60 infringements (food safety violations) a day – now it is about 20 per month. Cultural change related to working practices takes time.
- There is a need for a business plan for each and every port – capital repayments may be excluded but a fishing port can, as illustrated by the GSFPC, return a net profit if managed well.
- Port management policy and procedures need to be transparent, well advertised, equally applied to all and well documented. Rules and regulations inside the port must be adhered to.
- Some services are better provided by the private sector, such as security and janitor services.
- Fish needs to be kept moving in order to maintain quality – ports in Sri Lanka must address the issue of facilities for proper handling if they are to maintain quality. There is also a need for continuous contracted cleaning services during working hours.
- Maintaining close ties between the private sector and port management is essential in order that the port continues to address the needs of the private sector.
- Regular training and daily internal monitoring inspections are essential to maintain food safety standards. Food safety training for all new entrants working in the port is an important first step in ensuring minimum hygiene standards are maintained.
- There is a need for plenty of revenue collectors to be employed in the port. Given the volume of cash being handled daily, having a retail bank within the port is considered essential.
- A system of gate passes must be established to control entry to the port.

#### **Strengthening community-based organizations to fulfil their management role**

Community participation in the asset co-management function was codified through the MOU (included on the accompanying CD-ROM) and a system of “user rights”, which in brief require the CBO to:

- collect funds/charges agreed for the implementation of the business plan;
- organize solid and liquid waste disposal and settle all utility bills;
- prepare and submit regular reports;
- ensure facilities are used exclusively for the requirements and benefits of the fishers and other stakeholders, ensure the safe use of the fixtures and equipment and provide for the inspection of the facilities as necessary;
- maintain the cleanliness and proper maintenance of the FLC facilities.

Although the project design envisaged that it would provide support to new user group formation, this was deemed unnecessary given both the emergence of the RFO concept, promoted by the MFARD, and the importance of working with existing management structures. However, in order for these

management structures to fulfil their role, they did need training. This was delivered through a TOT approach, the starting point for which was the government officer training needs assessment.

Identification of the training needs of the fishing communities, and how the training was to be delivered, was done in consultation with the stakeholders during the regular FLC business planning development meetings. The project ultimately had to limit the number and range of courses delivered because of time and budgetary constraints and focus on the essential training to improve community participation in FLC management.

### ***Delivery of the fishing community training plan***

A total of almost 180 courses in 10 different subjects for a target audience of about 3 700 participants was delivered over a 9-month period. Seven of these ten courses were delivered by project staff and consultants working with trained government officers; only three technical courses were delivered by an outside training service provider (NIFNE). Table 2 presents the range of courses delivered.

TABLE 2

#### **Community training courses and target audience**

Course	Target audience
Implementation of business plan, asset co-management and use of operations and maintenance manual	Stakeholder office bearers and fisheries inspectors/fisheries resource management assistants
Fish handling, fish landing centre (FLC) sanitation and hygiene	Fishers and other stakeholders
Microfinancing for small entrepreneurship development	Fishers
Cross-visits/study tour to selected FLCs	Fishers
Use of the Global Positioning System (GPS) and fish finder	Stakeholder office bearers and fishers
Safety at sea	Stakeholder office bearers and fishers
Boat engine maintenance	Fishers
Home economics	Fishing communities (women)
Computer usage (Microsoft package)	Community-based organization (CBO) office bearers
Fisheries regulations and statistics	CBO office bearers

### ***Cross-visits programme***

Given the relative isolation and often insular nature of many fishing communities, it was considered important to implement a cross-visits programme so that communities and field-based government staff from the Assistant Director of Fisheries (ADF) offices could learn from one another. This provided an opportunity for cross-fertilization of ideas between well-managed and weaker FCS/RFOs, including an analysis of relevant success factors and the application of strategies to strengthen weak institutions and resolve limitations and constraints. This programme was extended to include a visit to the water-supply sector, where strong community organizations are successfully managing water supply schemes and managing their capital, operation and maintenance expenditure. Six cross-visits were completed in 2011 between:

- Kurusagahapaduwa and Thaldeka (two FLCs in the northwest);
- Nunawella, Kurusagahapaduwa and Godawaya (northwestern and southern RFOs);
- Peraliya, Sagarsirigama and Maggona (southern and northwestern RFOs);
- Nunawella and Ambakandawila (southern and northwestern sites);
- Nunawella, Godawaya and Madurankuliya (two southern RFO/FCS and a community water supply project in Puttalam);

- RFO/FCS operating in the inland fisheries sector (reservoir/irrigation major tank in Polonnaruwa District) and the small-scale fisheries sector in Trincomalee, Batticaloa/Kalmunai and Puttalam fisheries district.

The participants rated these programmes highly in terms of the exposure, cultural exchange and new knowledge gained.

### **Supporting livelihoods and ensuring sustainability – the business planning process and asset co-management**

Cattermoul, Townsley and Campbell (2010) suggest that there is no correct definition of what a livelihood is or should be, but that it is important to appreciate what the term “livelihood” can mean. In the United Kingdom of Great Britain and Northern Ireland, the Department for International Development adopted the following definition of livelihoods in 1998 (Carney, 1998): “A livelihood comprises the capabilities, assets (including both material and social assets) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”. Cattermoul, Townsley and Campbell (2010) go on to state that academics and institutions working in development have developed their own livelihood definitions, such as: “A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household” (Ellis, 2000). From these definitions, and the many others in use, it is evident that income-generating activities are just one part, albeit a very important one, of people’s livelihoods.

Gillett (2010), reflecting on experiences with fisheries centres in the Pacific, states that the business conditions and logistics within fishing communities are often difficult and the people/agencies that operate fisheries centres rarely have much business experience. Counter to this, the options for government agencies to improve the welfare and livelihoods of fishing communities are limited. This is equally true of fishing communities in Sri Lanka. Therefore, any development of small-scale fisheries infrastructure must be mindful of the need for capacity development of fishing communities where infrastructure is developed.

In early 2010, the I-FLCP initiated a business planning approach to ensure that stakeholders would be better equipped to operate and maintain the facilities provided, thereby promoting sustainability in line with the Government’s vision and post-tsunami policy of “build back better”. The sustainable management of any landing site facility depends on several factors, including:

- the availability of funds for operation and maintenance (O&M);
- the responsibility and commitment of the users to manage these facilities, in particular their ability to follow SOPS;
- developing and maintaining asset co-management links with the DFAR and CFHC field staff and other business support networks;
- the creation of business opportunities to raise funds and, in so doing, develop livelihoods and extend benefits to the community.

The project engaged a core team of four consultants to work closely with the community to prepare a business plan for each and every community – in most cases, the first ever to have been prepared for each CBO. Preparation of the business plans was supported by staff from the DFAR, by resource persons from the FCCISL and by project staff.

Initially, three model business plans were prepared. Three well-run but very different FLCs were selected to pilot this process – one for each works cluster in the east, south and northwest of the country. The chosen FLC located in the south of the country was considered by many to be an exemplary FLC and had won presidential awards to this effect, with a very entrepreneurial FCS. However, on closer examination of its operations, the project discovered that it had significant cash-

flow problems and was on the verge of bankruptcy (essentially because it was not charging its members enough for the services provided). Through the business plan development process, the project was able to work with the FCS leaders to explore ways of ensuring the future financial sustainability of what was otherwise a well-managed FLC.

This pilot activity at the three sites took a protracted time to complete. Therefore, the project had no choice but to consider changing its strategy and to ask the communities to prepare their own plans, with the project consultants acting as mere facilitators. However, it was soon evident, once this approach was taken, that there was insufficient capacity within the fishing communities to adopt this approach, particularly given the project duration. A compromise was reached whereby the project consultants continued to lead the business planning process but the FCCISL resource persons actively supported and encouraged participation by the stakeholders. Within the limitations of the project duration to validate different development strategies, this approach appeared to have worked successfully. Preparation of a total of 33 business plans<sup>41</sup> is considered to represent a significant milestone in contributing towards the sustainable management of the FLC facilities. The process of preparing these business plans was the project's primary strategy for introducing participatory asset co-management at the landing sites. One example of the 33 business plans prepared by the I-FLCP – for Moderawella FCS – is provided in an attached CD-ROM.<sup>42</sup>

A total of three business planning courses and two workshops were conducted involving the ADF, FCCISL resource persons and project staff to initiate and monitor delivery of the business planning process. These meetings provided an opportunity to explain what a business plan is, why it is needed, how it will be developed and how it will ultimately be used. It was originally intended to implement a series of similar district-based business planning sensitization workshops for the community stakeholders, but time constraints prevented this. Instead, the project delivered this training at each FLC at the time each business plan was presented to the stakeholders. The process from planning to completion of one business plan involved about 20–25 person-days of input, spread over a calendar period of 3–5 months. It was important to strike a balance between keeping the business plans as simple and understandable for CBO readership/usage as practically possible, while at the same time providing a “bankable document” that CBOs could use to support, for example, pursuit of a bank loan.

### **The operations and maintenance manual – complementing the business plans**

To support the community capacity building programme and complement the business planning process, an FLC Operations and Maintenance (O&M) manual was prepared for use at each landing site where community infrastructure was provided. Those FLCs with highly public goods such as roads and toilets did not require access to such a manual.

The O&M manual was translated into both local languages (Sinhala and Tamil), and training in its use was provided to the ADF and fishery community leaders. The English version of the manual is provided in the CD-ROM accompanying this paper.

### **Involvement of the Federation of Chambers of Commerce and Industry of Sri Lanka**

The FCCISL is the apex organization for the chambers and associations of commerce in the country. Membership of the FCCISL consists of 59 chambers and associations, representing 12 500 small–medium enterprises (SMEs) nationwide. The primary goal of the FCCISL is to support and promote the development of a strong private sector in Sri Lanka while safeguarding private sector interests. It is represented in each district and has established links with local traders, although it is generally not well known by small-scale fishers.

<sup>41</sup> The project did not prepare business plans for highly public goods such as roads.

<sup>42</sup> The original model business planning template and guidelines, an illustrative business plan and a multiple choice checklist (prepared by the author under a separate assignment) can be found under ART062GEN at <http://sfp.acp.int/en/guide>. A separate training manual developed for use by resource persons delivering business planning training is not published on this Web page.

With its business development mandate and almost complete nationwide coverage, the FCCISL was considered well placed to provide services to the project throughout the coastal districts. Therefore, an agreement was signed with the FCCISL and resource persons identified through the district chambers to serve as facilitators supporting the preparation of the FLC business plans.

## 5. DATA MANAGEMENT, MONITORING AND EVALUATION

### The project's monitoring and evaluation system<sup>43</sup>

The project document (FAO, 2008) emphasized that monitoring of the development activities under the project is critical, particularly given the involvement of a number of stakeholders – government institutions and agencies involved in the planning of work and approvals, community organizations participating in the planning of facilities, and construction contractors.

The I-FLCP included significant infrastructure interventions, and involved a number of consultants, contractors and target groups in many project sites. The participation of FLC users was also a key feature of the project interventions. In addition, the project's ambitious training plan required not only data on the number of people trained but some evidence of the efficiency, effectiveness and relevance of the training activities.

The functions of the M&E system were diverse:

- help people with project management and steering functions to make sure that the project was “on track”;
- provide data that help to discharge the accountability requirement;
- help show that project outputs are used by targeted groups and that expected benefits are sustainable;
- help provide lessons learned in the infrastructure component;
- assimilate the data and information generated by the D&S engineer;
- verify progress in the government staff training programme;
- help assess the capacity development needs of the fishing communities.

### *M&E concepts and principles followed and results achieved*

Grunewald (2010) stated that it is important to make a clear distinction between the project inputs, activities, outputs, outcome (immediate objective or purpose) and impact (related to the development objectives or goal). Although inputs provided in terms of vehicles, computers, contracts, staff inputs etc. should be recorded and activities followed systematically, the emphasis of M&E arrangements should be on outputs produced and achievement of immediate objectives. In short, the M&E system should be results-oriented.

Grunewald (2010) went on to suggest that participation in M&E ought to have two major aspects. Participation in decision-making was essential if the concept of asset co-management was to be realized, starting from the beneficiaries being consulted as to what the urgent needs are and in which way the infrastructure needs should preferably be satisfied, including how repair costs are recovered. This was addressed through the initial profiling of the landing sites and through the business planning approach. The second aspect of the involvement of beneficiaries in M&E is their role as codesigners of M&E arrangements (e.g. being consulted on how to best determine their degree of maturity as a user group) and as resource persons providing feedback (e.g. on the quality of services and FLC infrastructure and utilization of such benefits, i.e. beneficiary assessments). This aspect was only in part able to be addressed as part of the business planning input. It required the support of the local DFAR staff because much of the infrastructure was completed late, and the project was therefore not in a position to evaluate feedback from the beneficiaries.

The same vertical logic (means–ends or “if–then”) applied when designing the project (displayed in column one of the logical framework) could also be applied to subcomponents of the project, e.g. to the different types of training provided. This meant answering questions such as:

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<sup>43</sup> A monitoring and evaluation manual was prepared in late 2009 to early 2010 by an international consultant, Mr Matthias Grunewald. Much of the text in the early part of Chapter 5 is extracted or refers directly to this manual.

- What were the costs of a particular type of training, who were the trainers and type/number of participants? (input level)
- What was the duration of the training? What were the topics of the course in terms of major concepts, techniques, methods, etc.? (activity level)
- What capabilities/capacities were generated among how many participants? (output level)
- Were new capabilities/capacities being subsequently used at their work place, and to what degree? What keeps trained people to use what they acquired during their training? (outcome level)
- Having applied what has been imparted to them, what were the effects/benefits that accrue from the application? (impact level)

The project prepared a training evaluation report and terminal report that answered these questions at the input, activity and output level, including aggregated data on gender, training service providers, cost of training, planned versus actual training delivery, and the performance of trainers. However, a more detailed *ex post* training evaluation is required in order to address the questions at the outcome and impact level.

As emphasized by Grunewald (2010), the project's M&E system was first and foremost a tool to help management and the decision-making process. The project was burdened with an extensive array of monthly, quarterly, bi-annual and annual progress reporting requirements in various different formats, and this in part determined what type of information was collected and the indicators used. This information had to be consistently available, reliable and relevant so that M&E findings could be properly communicated. Recommendations could then be considered, and decisions taken and acted upon by management and the steering committee. Monitoring of follow-up activities also had to become part of the M&E system.

For many of the project's deliverables, such as the training plan and infrastructure construction, the project followed a simple monitoring approach, using bar-chart work plans, of comparing planned with actual situation. These were then used as inputs to the progress reports. For evaluation activities, this required a "before project" and "after project" comparison, although Grunewald (2010) makes the point that this comparison is only required if there was something meaningful to measure before the project's intervention. As many of the project's activities were innovative, baseline values could not be provided. Indicators that did require baseline values and some information on the "before project" situation was mapped using baseline data collated from the FLC profiles. Again, the project did not have the time to assess the "after project" situation – this needs to be addressed *ex post*.

The M&E system should contribute to accountability and transparency (Grunewald, 2010). Successes and failures should be acknowledged and explained in order to avoid mistrust and learn lessons from experience, e.g. which factors accounted for a major delay or caused the expected beneficiaries not to benefit? Eventually, systematic recording should be in the interest of both the one who is held to account and the one who asks for an explanation or justification. To have recorded something properly means, in principle, to have a continued access to this piece of information that is valuable perhaps also for others and other purposes than only for the one it was collected. Wide accessibility can also contribute to efficient operations as it will avoid the same type of information being generated again, which can be costly.

### ***Major elements of an M&E system***

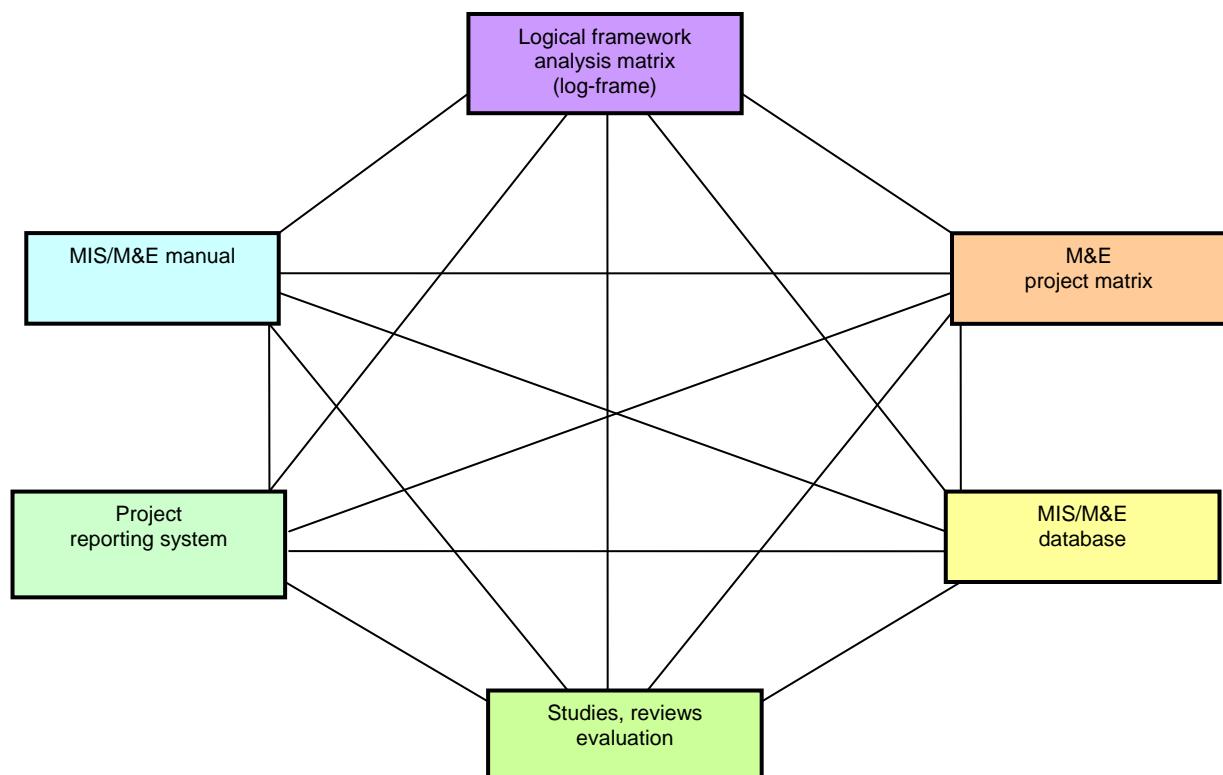
Most M&E systems on development interventions try to comprise information on the following subjects (Grunewald, 2010):

- delivering and employing of inputs/resources;
- conducting of activities;
- production of outputs;
- achievement of immediate objectives (purpose, outcome);
- attainment of/contribution to higher-level objectives (goals, impact);

- fulfilment of critical assumptions /risk avoidance;
- efficiency (input–output relationship);
- effectiveness (degree of utilization of what has been produced);
- relevance (importance of what has been achieved, e.g. for target groups);
- impact or positive and negative side-effects (spin-offs).

Thematic cross-cutting issues such as the participation of stakeholders, sustainability, environmental impact and gender also need to be considered within the context of an M&E system. The closely interconnected M&E elements of the proposed system are illustrated in Figure 1. As their interrelationship is strong, changes in one element require adjustments in other parts of the system. For example, changes in the log-frame<sup>44</sup> would require adjustments in the M&E matrix and reporting system. Proper administration of the M&E/management information system (MIS) database, where physically (usually in electronic format) most of the information generated by the system is stored, guarantees that certain parts are treated as confidential and allows access only to the authorized users.

**FIGURE 1**  
**Major elements of the monitoring and evaluation (M&E) framework**



Source: Grunewald (2010).

#### ***M&E working documents – result framework***

Although development of the elements can proceed simultaneously, a useful starting point is an agreement on the project's log-frame (Grunewald, 2010). A review of the original log-frame prepared at the project's design stage led to its revision in November/December 2009. Part of this log-frame was used as the basis of a results-oriented M&E system. This is referred to as the “result framework” and comprises the three upper levels of the logical framework analysis (LFA), from outputs to goal only (Appendix 7). This framework includes the three technical project components with the project's key outputs. In such cases, there is always an “invisible” component that comprises all activities necessary to steer, manage and administer the project.

<sup>44</sup> This is the project matrix prepared in applying the rules of the logical framework analysis (LFA).

Revision of the LFA contributed to a better understanding of key concepts and also prompted the identification of indicators that then appeared in the M&E master tables and the MIS/M&E database. At the same time, working with the LFA had an impact on the reporting system and influenced the terms of reference for conducting studies and reviews in terms of the information that has to be collected and carrying out the evaluation foreseen in the project document.

### ***M&E working documents – M&E master tables***

The M&E master tables are the main tables that show the sources of essential data and information. These were the working documents used by those in charge of the M&E system. Two types of tables were prepared.

The first type provided a comprehensive overview based on the LFA and is termed the M&E matrix (on the accompanying CD-ROM, Tables 1–10). It details the methods and sources of data collection, responsibilities, and timing and frequency of data collection to evaluate the output, outcome and impact for all the indicators and assumptions mentioned in the project’s log-frame. Essentially, it is therefore the proposed M&E reporting system of the project.<sup>45</sup> The part covering the assumptions<sup>46</sup> tries to ensure the monitoring of critical assumptions. Critical assumptions are those that have a certain probability to be fulfilled and could jeopardize the achievement of project results and objectives.

The second type draws heavily on data generated through other forms and questionnaires to present aggregated data and information in the form of parameters for major project progress and completion reports in the form of a table (on the accompanying CD-ROM, Table 11). The table addresses the infrastructure component, showing how the planned and actual cost-effectiveness – in terms of total cost per beneficiary – of each infrastructure facility constructed by the project could in theory be automatically calculated. In practice, while the D&S engineer provided details of the planned cost of each infrastructure facility at each site, it was almost impossible to disaggregate the actual cost as the contractor only presented aggregated final accounts (as discussed in Chapter 3). Therefore, it was only possible to assess the overall planned and actual cost-effectiveness for all infrastructure facilities together in one landing site; this in turn serves as a measure of the cost-effectiveness of I-FLCP operations under the infrastructure component. Useful extra pieces of information generated from the completion of table (Table 11 on the accompanying CD-ROM) could include:

- number and type of completely new infrastructure facilities at each FLC (and, where relevant, renovated/repaired and amended/extended infrastructure);
- overall estimated and actual project cost for all infrastructure at each FLC and under the project;
- total estimated cost for different types of infrastructure (from D&S engineer’s figures);
- differences between estimated costs and actual costs at each FLC;
- number of actual and expected beneficiaries (and the difference between these figures) for each FLC and project component 2 in totality.<sup>47</sup>

Another M&E master table was prepared, focusing on the capacity development of the CFHC, MFARD and DFAR through the formal training activities. This master table aggregated the results for all of the training courses using the format in Table 3 for each course, classified according to the five-component training plan as described in Chapter 4.<sup>48</sup>

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<sup>45</sup> As the timing and frequency of data collection and responsibilities have been indicated, an M&E work plan could be developed also in the form of a bar chart.

<sup>46</sup> Assumptions are considered positively formulated risks. Report formats requiring information on project risks should therefore refer to this part of the M&E manual.

<sup>47</sup> This could also be assessed for each type of infrastructure through an *ex post* survey (baseline data of expected beneficiaries were collected as part of the environmental screening process).

<sup>48</sup> A similar format could also be used for the fishing community training courses.

TABLE 3

**Monitoring and evaluation master table for training course evaluation**

Item number	Course 'X'	Planned	Actual
1	No. of courses organized		
2	Average course duration (days)		
3	No. of male staff trained		
4	No. of female staff trained		
5	No. of total staff trained		
6	No. of CFHC staff trained		
7	No. of MFARD staff trained		
8	No. of HQ DFAR staff trained		
9	No. of district DFAR staff trained		
10	No. of other staff trained		
11	No. of training days (= No. 1 × No. 2)		
12	No. of trainee days (= No. 2 × No. 5)		
13	No. of trainer days		
14	Cost per training course		
15	Cost per trainee (= No. 14/No. 5)		

**Master plan for rehabilitation and the need for a national database**

The project document proposed that a national database for FLC construction/rehabilitation be created, linked to the development of a national fisheries infrastructure master plan, namely, an action plan for the development of fishing harbours, anchorages and landing sites. While the preparation of the master plan itself was ultimately determined to be beyond the scope of the project,<sup>49</sup> the establishment of the database is an important input to this planning process; once established, it could be used to guide sector planning and the allocation of scarce aid/government funding, or used as a tool to help manage fleet size and fishing effort.

The establishment of a national database system takes time and requires careful planning, addressing issues such as what software to use, where the database should institutionally be located, who should manage and fund it, and who should have access to it etc. The Government of Sri Lanka had no database system where the project could store and manage statistical and geographical information related to FLCs. As a result, there was traditionally limited information sharing within and between the organizations involved in the management of FLCs and other infrastructure investment within the sector at a national and regional level. To overcome this shortfall, the project decided to develop an up-to-date and freely available 'where, what and who' (W3) type Web-based geographical database that supported the early M&E activities of the project and demonstrated to the CFHC and MFARD what could be achieved using GIS tools.

***Developing a Google Earth database***

As described by Dharmarathne (2010), the project chose a database format known as a Google Earth KMZ file<sup>50</sup> that contained the site names, coordinates, informative text and links to site photographs of

<sup>49</sup> Since late 2010, the MFARD has been preparing a strategic plan for the sector, which it is hoped will include some consideration of the need for a national fisheries infrastructure master plan.

<sup>50</sup> KML (Keyhole Markup Language) is a file format used to display geographic data in an Earth browser such as Google Earth, Google Maps, and Google Maps for mobile. A KMZ file consists of a main KML file and zero or more supporting files that are packaged using a zip-file utility to one unit, called an archive. The KMZ file can then be stored and e-mailed as a single entity. A network link can fetch a KMZ file from a Web server.

all of the landing sites under development. The database was constructed in a two-step process. Initially, during the environmental screening of the FLCs (as described in Chapter 2), their geographical coordinates (longitude and latitude) were determined using the Global Positioning System (GPS) calibrated to the Sri Lankan local coordinate system of *Kandawala* (with the parameter of ‘false\_easting’, 200000 and ‘false\_northing’, 200000). The second stage of the process involved transferring all of these coordinates to ArcMap 9.2 software registered under the ESRI ArcGIS geographical processing system. During this process, the project included details of the number of fishing boats and beneficiaries in the ArcGIS database. From this, the project was able to generate themed maps, illustrating the distribution of landing site beneficiaries (Figure 2) and comparing the number of beneficiaries with the number of boats in use at each landing site (Figure 3).

Dharmarathne (2010) suggests that the advantage of using the ArcGIS map is that it can be converted in to a single KMZ (Keyhole Markup Compressed) file using an extension of the ESRI software package that can then be opened through the freely available Web-based geographical software Google Earth by any user with a basic Internet connection. Using the KML format, the following basic background FLC information was added to a Google Earth Map:

- name of the FLC and in which district it is located;
- number of beneficiaries (from the environmental screening);
- number of registered fishing boats;
- status of I-FLCP intervention using a “traffic light” system;
- details of the basic needs of the FLC plus one or two images of the FLC

### ***Use of the Google Earth database***

As most users are not familiar with sophisticated GIS technologies such as ArcGIS and ArcMap, Google Earth provides a simple, quick and free means for the project to map and disseminate information about the status of FLC development to those with access to a computer. End users can easily navigate and generate any kind of geographical/statistical information that they need. Development planners can check the exact locations of landing sites and the distance from an FLC to the nearest ADF office, fish market, urban market or fishing port.

The project management was similarly able to use the software and KMZ file-link to help monitor and demonstrate to government officials at steering committee meetings, for example, the progress and current status at the landing sites. The project was also able to share this link by e-mail, allowing third parties to access the data remotely. Users navigated the file by clicking on the FLC image displayed on the Sri Lanka map or by selecting the name of the FLC from the drop down menu available in the left side of the Google Earth Window. The project updated this KML file on a regular basis until it became obsolete at the completion of the project.

### **Development of a GIS database**

As part of its capacity development programme with the ministry, the project sought to integrate the use of GIS as a fisheries infrastructure planning and management tool. Following discussions and the consideration of various options/proposals with the MFARD Statistical Unit and the CFHC, it was agreed that there was a need to develop a more comprehensive windows application geographical database than the Google Earth system already in use.

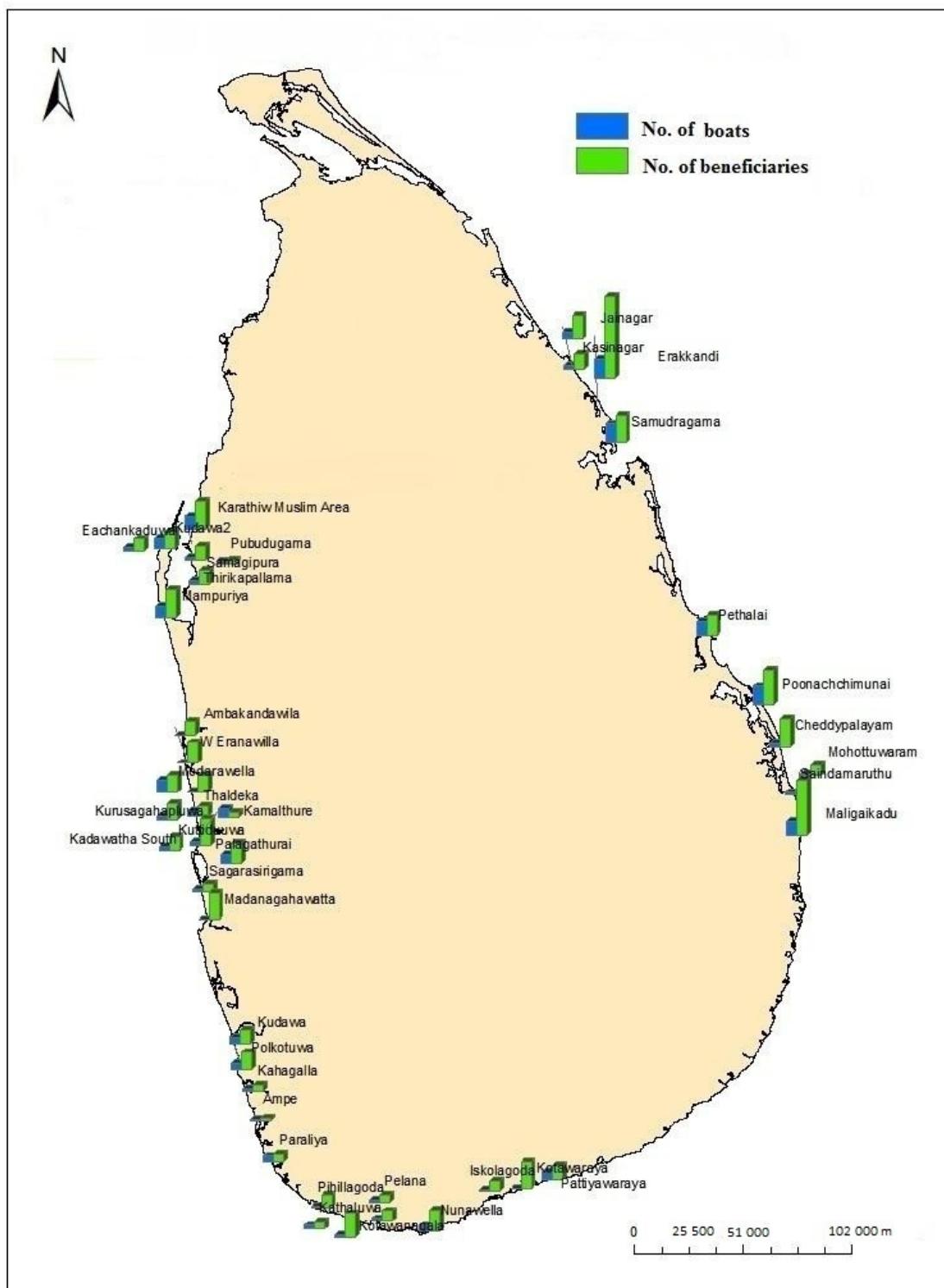
This database would need to manage all of the technical (geophysical and modelling data), geographic, infrastructural and fishing fleet information encompassing the known FLCs, anchorages and fishing ports nationwide. This would be the first time that such a national database existed since the end of the conflict in the north and east of the country and, as such, is an important unifying strategy for the sector. It needed to be accessible to the MFARD, CFHC, DFAR, CCD, NARA, LHI and other various

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When the KMZ file is unzipped, the main .kml file and its supporting files are separated into their original formats and directory structure, with their original filenames and extensions.

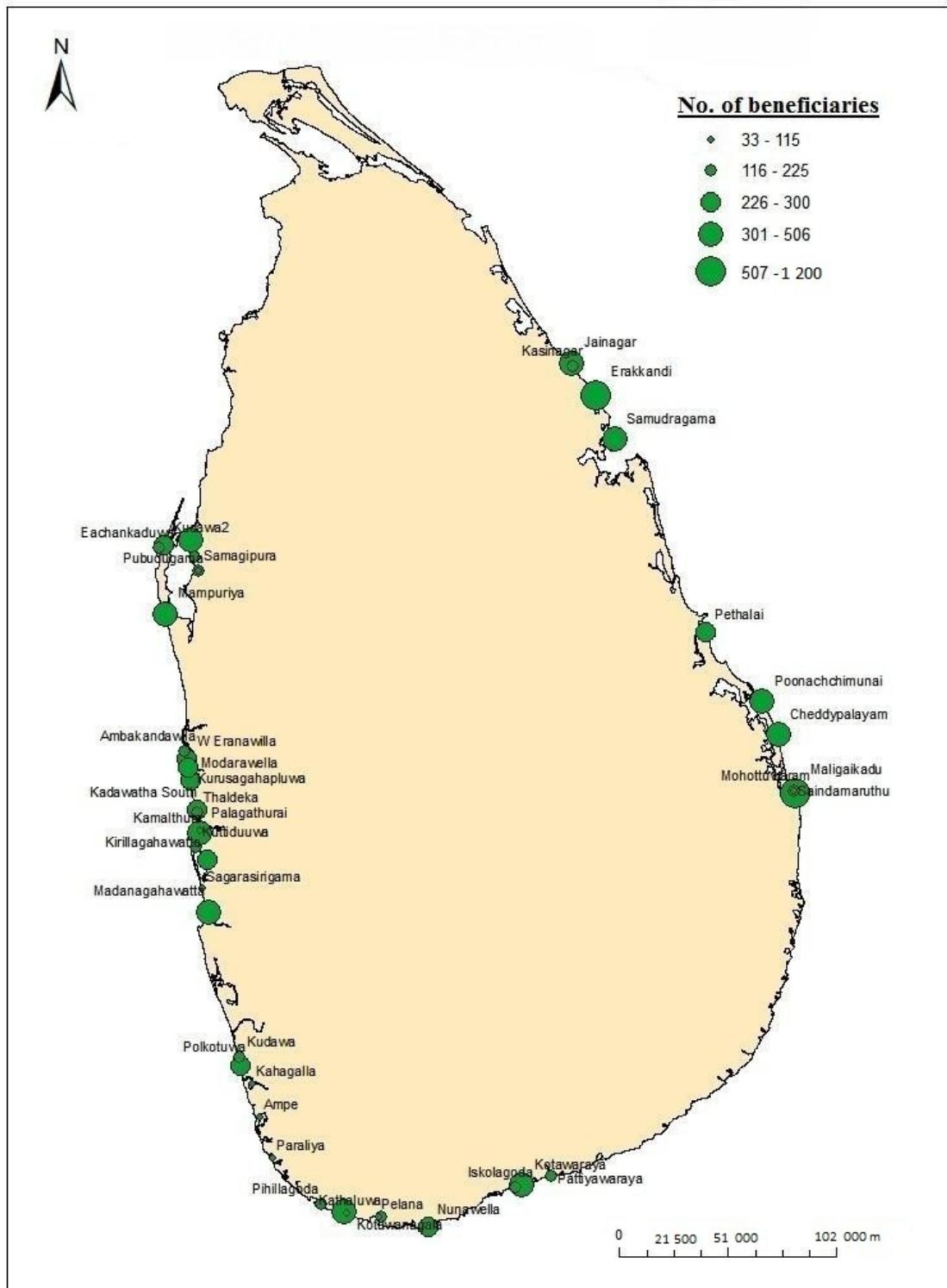
academic and planning institutes working in or with interests in improved management of the coastal belt.

FIGURE 2  
ArcGIS generated map of the distribution of landing site beneficiaries and boats



Source: Dharmarathne (2010).

FIGURE 3  
ArcGIS generated map of the distribution of the number of beneficiaries



Source: Dharmarathne (2010).

The project was aware of a database that had previously been provided ten years ago to the CFHC with funding from an Asian Development Bank (ADB) project, but which was never maintained and was therefore no longer in use. This database was provided by a company (Halcrow Group Ltd) that

has proprietary ownership of the software programme SANDS, a comprehensive windows application geographical database system that over the past 20 years has evolved into an industry-leading data capture, monitoring and analysis suite for asset managers, engineers, researchers and scientists. The software is now licensed to users around the world, ranging from national government agencies to research institutes.

Since the development of this original SANDS database, a number of institutes and development projects have collected information and developed initial databases related to FLC, port and anchorage development, including:

- the sensors and statistical unit of the MFARD;
- the CCD and DFAR;
- International Fund for Agriculture Development (IFAD) landing sites and anchorages (ongoing) – 18 landing sites and 3 anchorages<sup>51</sup> are being developed/rehabilitated with the work implemented through the United Nations Office for Project Services UNOPS;
- Netherlands-funded harbour at Dikkowita (scheduled for completion in mid-2012);
- the ADB-funded North East Coastal Community Development Project (east coast) and Tsunami-Affected Areas Rebuilding Project;
- Icelandic International Development Agency (ICEIDA)-funded fisheries infrastructure project (completed in May 2009) – a total of 28 landing sites were developed (24 FLC two-storey buildings, 2 auction halls, 1 DFAR radio room and 1 toilet block);
- the Greek-funded FLCs developed at Dodanduwa (completed in 2009) and Negombo (completed in 2010);
- the Italian-funded FAO Post-Tsunami Project (completed in August 2007), which involved some infrastructure development;
- various international and national NGOs – CARE International, Caritas SEDEC, FORUT, Oxfam, Sewalanka Foundation, World Vision and Nestle;
- up to 15 new fishing harbours (including 3 already under construction) being built with support from various multilateral and bilateral aid donors.<sup>52</sup>

The hope was that all of these data would be made available to populate an upgraded SANDS database, along with data from the I-FLCP and the existing SANDS database from the earlier ADB-funded project already held by Halcrow. The data within the existing database contained diary inspection forms<sup>53</sup> with site photographs; a range of time-series wave data and water level data; transformation coefficients (which allows for the transformation of offshore deep-water waves to a specific location, and subsequent analysis, e.g. sediment transport etc.); and some mapping data (Google Earth images licensed to Halcrow from Google Earth Pro and aerial photographs).

### ***Use of SANDS as a management tool***

The SANDS database provides a powerful facility through which geospatial and temporal data related to the coastal belt can be monitored and analysed. Users of this system can store information centrally and reference to mapping systems that can be inspected, edited and compared on a synchronized timescale, allowing sets of data to be viewed simultaneously. It also allows weather and shore condition data to be entered, stored, inspected and compared. By analysing both climatic and beach profile data, trends in coastal response can be detected. SANDS is also capable of storing, retrieving and analysing a wide range of environmental data, reports and records related to fishing harbours and FLCs.

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<sup>51</sup> Up to 18 landing sites and 3 anchorages are documented to be constructed under IFAD funding, but the I-FLCP is currently only aware of the completion of 13 landing sites under construction.

<sup>52</sup> The exact number of new ports planned is not known and is assumed to be dependent on donor funding (in particular from China).

<sup>53</sup> “Diary forms” are the data entry forms used to store and analyse statistical data for each and every port, anchorage and FLC. This allows for the easy sharing of statistical data among many uses and minimizes data redundancy.

The design and initial population of the database was completed following technical training inputs by an international consultant in December 2010 and in March–April 2011. A letter of agreement was also signed with the NARA to assist the project with population of the database<sup>54</sup> and a working group established to support the data gathering/database population process. The database was built using information from the CFHC, MFARD and project staff. The aim was to populate the database with the following information:

- location and plans of all ports, anchorages and FLCs (latitude/longitude and MFARD number);
- aerial photographs and visual images as appropriate;
- land ownership title deeds and survey plans;
- list of buildings/physical assets (built when, by whom, state of repair and usage) including:
  - major marine structures (breakwaters/jetties/piers and quay walls),
  - minor marine structures (light beacons, quay wall, slipways and floating pontoons),
  - fisheries service centres, offices and accommodation,
  - net mending halls, fish auction sheds, ice storage facilities and ice-making plants,
  - fish processing facilities and *wadies* (fish trading storerooms),
  - utility water and power supply, toilet blocks, feeder roads and fencing,
  - boat and engine repair workshops, stores and other service facilities,
  - fuel storage tanks and fuel distribution points,
  - associated buildings (nursery school, etc.) and other port assets;
- FLC investment data;
- port, anchorage and FLC management information (contact persons, DFAR staff, etc.);
- waste disposal facilities – solid, liquid and hazardous waste disposal;
- fleet information – multiday boats, one-day boats, fibre-reinforced plastic (FRP) boats with outboard motors and non-mechanized canoes, plus details of registered fishing gear and engines;
- fish landings – low-volume high-value species, high-volume low-value species, seasonal variations, local and wholesale sales, export sales etc.;
- current status of the port, anchorage and FLC assets/work in progress, etc.;
- economic and environmental data – cost–benefit analysis data, environmental impact statement/assessment (EIS/EIA) reports, sanitary inspection reports, etc.;
- socio-economic data – census of number of fisher families, status and membership of FCS and/or CBOs;
- Field and design study reports – topographic and hydrographic survey, wave hindcast, geotechnical and hydrological survey.

### **The project’s “traffic light” system**

With so many FLCs to support nationwide and frequent changes in their status, the project had to develop a robust operational M&E system for continually ranking and prioritizing infrastructure development. The project came up with a simple but effective traffic-light dashboard-type system<sup>55</sup> of key performance indicators to monitor the status of each FLC, with each site colour-coded – green, yellow and red – dependent on its development status.<sup>56</sup>

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<sup>54</sup> The NARA was chosen as the institutional home for the database, rather than the CFHC, because the NARA has the mandate and already maintains other national databases related to the management of the marine environment, plus it has the recurrent budget and staffing capacity to help ensure post-project sustainability. The CFHC was provided with a direct Intranet access to the database.

<sup>55</sup> A dashboard is a management information system user interface similar to the dashboard in a vehicle that is designed to be easy to use and read.

<sup>56</sup> The status monitored using the “traffic light” system refers primarily to the infrastructure component of the project because this was the most demanding in terms of logistics and planning early on in the project.

The colour of the “traffic light” essentially tells the story. “Green” FLCs are those that meet all of the selection criteria at any specific point in time and have been or are in the process of being developed. The development of “yellow” FLCs remained on hold subject to clarification of one or more development issues, typically for social, institutional or environmental reasons or an issue with the availability of public land. While the project planned to assist these sites in overcoming their constraints to development,<sup>57</sup> in reality this was not done owing to the constraints in project funding and time. “Red” FLCs were those that were rejected outright, based on the original selection criteria described in Chapter 2, or the proposed development had to be stopped indefinitely pending the outcome of more detailed investigations. Changes in the status of each FLC could be for a variety of reasons. Examples of the downgrading of sites from green to yellow/red were variously because of:

- a lack of commitment by a community to the proposed investment, sometimes even after the contracted work had started;
- problems obtaining CCD approval;
- cancellation of the investment at the request of the MFARD;
- uncoordinated or unknown inputs at a specific FLC by another project making the FAO project input unnecessary.

Appendix 1 provides a project-closure map of the status of all the landing sites dealt with since project inception, a total of 78. Many of the FLCs moved in status from “green” to “yellow” and in some cases from “green” to “red”, or vice-versa, during the project. Table 4 illustrates the broad changes (on a half-yearly basis) in the status of the total number of FLCs throughout the lifetime of the project.

TABLE 4  
**Changes in fish landing centre “traffic light” status, April 2009 – September 2011**

	April 2009	Sept. 2009	April 2010	Sept. 2010	April 2011	Sept. 2011
Green	34	34	33	43	42	42
Yellow	15	16	13	14	10	10
Red	9	9	15	21	26	26
<b>Total</b>	<b>58</b>	<b>59</b>	<b>61</b>	<b>78</b>	<b>78</b>	<b>78</b>

The project’s traffic-light database system was maintained using Microsoft Excel spreadsheets, organized by district and by traffic-light status. The spreadsheet table headings (columns) related to data collated for each listed FLC were as follows:

- I-FLC Project code,
- needs assessment reference number,
- name of landing centre,
- total number of vessels at the FLC,
- total number of beach seines at the FLC,
- average catch (landings) per day at the FLC,
- FCS status – active or not, or just formed, and the number of members,
- number of beneficiary fishing families,
- land availability,
- a summary of the findings from the needs assessment,
- approximate cost of the infrastructure development (this figure could be updated when the detailed BOQ had been prepared),
- recommendations following the original needs assessment,
- brief details following each field visit (in terms of updating the status of the site or changes in design) – this may require several columns dependent on the number of visits,

<sup>57</sup> And in so doing, upgrade their status from “yellow” to “green”.

- investment cost per beneficiary family (calculated from the approximate cost divided by the number of beneficiary fishing families).

The traffic-light system allowed the project to keep track of the chronology in changing status of each FLC and helped project management in analysing the relative cost-benefit of investment at each site. It also helped the project to prioritize resources and record the reasons why sites were ranked as “yellow” or “red” and consequently not developed (see Appendix 8 for a summary list of such sites). The traffic-light system was particularly useful in dealing with the lengthy process of obtaining CCD approval at many of the sites (as discussed in Chapter 2).

## 6. LESSONS LEARNED

### Project design

Too much time elapsed between the formulation and implementation of the project. As a result, the “justification” for the project may not have been as clearly understood by the principal stakeholders as it should have been. This argues for the importance of a coherent communication strategy as discussed below. Delays in implementation also compromised the original planned three-year project time frame by at least six months.

The project ended up addressing different needs for a wide range of fishing communities across the country, namely postconflict, post-tsunami and developmental. Despite the logistical and security constraints associated with working in Sri Lanka, given the time frame of the project coinciding with the end of the conflict in 2009, the need to broaden the geographic scope of the project to include postconflict areas was inevitable.

The geographic remit of the project was considerable. Time, effort and resources could have been saved by this and other past and ongoing projects if there had been better overall coordination of donor initiatives. The responsibility for this lies with the MFARD, and the CFHC also has an important role to play in this respect.

The selection of the CFHC as the principal project stakeholder in the project’s design was, with the benefit of hindsight, a mistake. Given their capacity in the districts and role at the landing sites, the project should have been designed with the full involvement of the DFAR. The establishment of a project implementation unit within the MFARD involving both of these institutions, inclusive of the FLC design unit referred to below, would have greatly benefited project delivery and coordination.

While the seaward boundary of the project’s activities was essentially taken as “the beach”, landing sites have a role to play in promoting responsible fisheries, as enshrined in Article 8.9 of the Code (FAO, 1995). Fish landing centres have an important role to play in promoting simple resource conservation measures as the persons who control the market at a landing site can exert influence over fishing practices in the area (Gillett, 2010). Therefore, integration of the project with other marine resource management initiatives should have been promoted.

### Capacity development

An integrated and inclusive approach to capacity development was attempted inside the CFHC with the proposed establishment of the FLC design unit (as discussed in Chapter 4). This initiative failed because of a lack of capacity within the CFHC and a lack of vision by those responsible to consider staffing this unit. As discussed in Chapter 4, the original concept of establishing this unit was that it should have several functions and the capacity to address economic, environmental, social and physical (spatial) planning issues, as well as the more typical technical issues. This original concept is still considered valid. A way forward for the CFHC was proposed prior to project completion that involved in summary:

- Appoint staff in the PIU and agree on a staffing plan and job descriptions.
- Ensure that the PIU is able to support the CFHC in the future design of FLCs (with the provision of equipment and data from the I-FLCP, including access to SANDS).
- Determine which FLCs may require a supply of ice and fuel from a CFHC harbour and discuss service delivery pricing issues to ensure financial sustainability (the CFHC must provide a financially competitive service, otherwise the FLCs will source these services from elsewhere).
- Review how the PIU will project the same standards of construction, hygiene, fish handling and the management to the rest of Sri Lanka’s FLCs.
- Adopt the business planning approach and FLC O&M manual used successfully at 33 of the 41 FLCs by the project.

- At landing sites that maintain good fish handling practices, explore fish export marketing strategies with local fish exporters.
- Identify and plan to support new market opportunities for FLCs linked to income diversification and ecotourism; examples include tours to fishing harbours and day fishing trips from landing sites.

A more integrated and inclusive approach to capacity development should have been taken with the DFAR, given that the district staff of the DFAR is the key government institutional stakeholder that linked the project's activities to fishing communities at the village level. Capacity development of the ministry staff would also be enhanced if the MFARD developed adequate job descriptions for its entire staff, in line with those that were drafted for the CFHC staff by the project as an output from two training courses. Staff of the MFARD, CFHC, DFAR and NARA was reportedly generally highly satisfied with the training that they received through the project (GreenTech, 2011; FAO, 2011). Although many of the DFAR staff have been unable to use the new knowledge and experience they have acquired in support of the project's interventions,<sup>58</sup> staff have applied their new skills and experiences in support of other government development programmes.

One of the early constraints faced by the project was identified during completion of the TNA and training plan (described in detail in Chapter 4). It was evident during the preparation of this plan that, given the geographic spread of the project, number of government officers to be trained, number of courses to be implemented, and project related time and financial constraints, delivering training at venues around the country was not going to be feasible. Therefore, the project refurbished a large auditorium belonging to the CFHC capable of seating up to 300 people. This served both to demonstrate the project's willingness to provide institutional support to the CFHC and provided the project with a suitable training venue. The only observed drawback to this strategy was that some of the female government staff were unable (or unwilling owing to cultural constraints) to travel to Colombo to attend training courses that required them to be away from their families for several days at a time (FAO, 2011).

A follow-up evaluation of specific training courses should have been done in order to measure the overall impact of the training programmes in the working environment. This would have involved circulating a supplementary TNA questionnaire to each participant (that has attended at least three courses) within 4–6 months of completion of these courses, asking course participants to provide feedback on the application of the knowledge and skills acquired in their daily jobs. Training is a continuous process and needs to be supported and budgeted for by the MFARD. Justification for continual training support includes the fact that:

- Government officers move jobs and receive promotions.
- A fishing community is a multifunctional society, and the economic environment within which an FLC operates is dynamic. Fishing communities need to be able to adapt to this changing environment.
- The success of fisher organizations depends largely on enhancing the knowledge and skills of individuals, particularly as the office bearers of FCS/RFOs are subject to regular change and their successors need to be trained.

The institutional strengthening of, and dealing with attitudinal change within, fishing communities was the most challenging constraint to development faced by the project. The institutional capacity of the CBOs representing the fishing community and the degree of social cohesion within a fishing community are important factors in both determining the community's capacity to support the project's work and in their ability to manage the FLC. It is recognized that more time was needed to complete the capacity development programme within the fishing communities to ensure this success.

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<sup>58</sup> Primarily because of delays in implementing the project component on institutional framework for community participation in FLC management, which should have involved ministry staff delivering training to fishing communities, mentored by the project staff/trainers.

The project had to pilot innovative approaches to tackling a problem that has been recognized by the MFARD for some time, namely, that despite all of the funding and technical assistance delivered post-tsunami, much of the infrastructure and physical assets provided are now redundant, abandoned or not functioning as they should. Central to the successful institutional strengthening of fishing communities, the following issues had to be addressed:

- The PMU was limited in number, and additional local consultants were required to support the team. Working in the field was logically complex and required significant local support and facilitation.
- Current MFARD policy precluded NGOs from being directly involved in training delivery.
- There were an estimated 586 district-based fisheries staff to be supported and trained,<sup>59</sup> but the project was only able to fund and deliver training (for any one course) to a maximum of 90 persons (3 courses each with a maximum of 30 persons).
- The project had a target stakeholder audience at the Phase 1 sites (i.e. Clusters I, II and II) of some 10 165 fisher families (based on data from the 2009 baseline environmental survey).
- Staff of the DFAR generally had limited or no business skills. However, there were other recognized actors in the districts with complementary skills and resources.

### **Promoting community participation in management and the importance of business planning**

The undercapitalization of fisheries associations and cooperatives hampers the development of the artisanal fisheries in Sri Lanka. Funds for even simple maintenance or small investments are not generally available. As a consequence, these communities are often hampered in their participation in the wider economy. This was evident from the facilities provided under other (previous or still ongoing) projects and programmes, which in many cases are known to be non-functioning and/or not managed properly, resulting in the poor maintenance of toilets, non-payment of utility charges, no collection of waste, etc. As discussed in Chapter 4, the project worked hard to address this issue through the concept of asset co-management; namely the sharing of responsibility between the government and communities to manage the FLCs.

The cornerstone of the asset co-management strategy was the preparation of FLC business plans in consultation with the DFAR and respective fishing communities. These same communities were given training to help build their capacity to establish the FLC facilities as small business centres. While it is accepted that not all landing centres can or will be financially sustainable, the preparation of bespoke business plans for each FLC should ultimately benefit a wide range of fisheries-related microenterprises, and in so doing support the development of fishing community livelihoods.

One criticism made of the business planning activities is that they should have commenced earlier in the project's implementation schedule (GreenTech, 2011). While these activities started one year into the project, it is difficult to see how the project could have started this work in detail any earlier, given the demands of the infrastructure component. Experience from other projects elsewhere also suggests that communities are seldom motivated to dedicate time and embrace change until they see evidence of a project's commitment.

However, the project should have done more earlier on to assess (quantify) and advise each CBO of the cost implications of proposed investment in terms of meeting utility and maintenance costs. This could have been done before detailed plans were prepared and might in turn have influenced in a positive way the decision-making process by the communities themselves as to their real infrastructure "needs" rather than "wants".

The detailed business planning process should also have been implemented more swiftly. The delays experienced were really a consequence of piloting a new asset co-management approach in a few sites first before rolling out the business planning activities nationwide. Because of this delay, some of the business plans were not in place when the landing sites were officially opened. Some fishing

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<sup>59</sup> Based on data from the TNA completed in 2009 citing the 2007 FAO Assessment.

communities, as well as some district staff from the DFAR, were therefore reportedly uncertain about the details of both the final business plans and the MOU<sup>60</sup> transferring ownership and the right to operate and manage the facilities to the DFAR and fishing communities. This concern will have to be addressed post-project by DFAR headquarters and CFHC staff, both of whom were involved throughout the business plan development process.

One of the unexpected constraints that the project had to address in developing the co-management structure and defining who to hand over the infrastructure to concerned the issue of the confused role of RFOs versus FCSs. Many of the FCSs that should have formed the basis for the co-management groups/committees (as discussed in Chapter 2) were dysfunctional. A study of the institutional structure of the sector reported only 70 percent active – 651 out of a total of 924 – and, of those active, only 115 operated village banks (Banks *et al.*, 2007). The MFARD has little formal authority to work with these societies even though the MFARD has a department of cooperatives that is responsible for the promotion of FCSs. The Department of Cooperative Development in another ministry provides limited support to the sector. It was partly as a response to this weakness in the sector that the MFARD introduced the concept of RFOs.

At the start of the project, the stakeholders involved in the FLC infrastructure activities were the DFAR and respective FCSs. Therefore, the understanding was that the FLC assets would be handed over to the cooperative societies on the understanding of a long-term lease from the DFAR. Where the FCS is de facto equivalent to, or has been replaced by, the newly established RFO, managing this handover was not an issue. However, there was evidence at some landing sites of conflict between FCSs and RFOs (invariably regarding “ownership” of the FLCs) and this created a problem for the project in managing the handover of the FLCs. This became a rather more complex task that had to be addressed by the PMU on a case-by-case basis. In complex cases, the MFARD was asked to intervene to resolve any local dispute.

### **A role for FCCISL**

Involving the FCCISL in delivery of the business planning activities was a positive value-addition to the project (see Chapter 4). Its role should be continued to support communities working towards ensuring the financial sustainability of each fishery service centre. The FCCISL network is in a strong position post-project to continue to contribute supporting direct and indirect beneficiaries such as fishers, traders, processors and women’s groups, all of whom are potential members of an RFO.

### **The importance of a communication strategy**

Visibility is an important issue for the aid donor, FAO and the Government, particularly for such projects with a significant budget and infrastructure component. This issue was successfully addressed at the opening of the landing sites and significant project procurement milestones, such as the opening of the project office, handing over of equipment and the signing of the works contracts.

Despite the considerable and continual efforts made by the project to consult and explain the building designs and construction process to the fishing communities and DFAR staff,<sup>61</sup> a communication gap reportedly still existed between the project, fishing communities and the DFAR at the district level (GreenTech, 2011). While it is likely that this was an issue in a limited number of cases only, what was needed was better project visibility at the district level and within the communities.

At the same time as adopting an SLA “people-centred” approach to many of its development activities, the project was, inevitably, a process of managing physical and attitudinal change – investment in new infrastructure, the development of human capacity and enabling communities to

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<sup>60</sup> This MOU must also be securely based in law in order for it to have validity with both the community and the government. If not, then any agreement between a FCS/RFO and the DFAR will probably break down over time.

<sup>61</sup> They both signed off on drawings/plans before construction work started.

develop a business-oriented approach to management of the FLCs. Bringing about this change demands an effective communication strategy.

The project attempted on several occasions to initiate a quarterly newsletter (in Sinhala and Tamil) directed at the DFAR district-based staff and fishing communities, but failed for a number of reasons; particularly the lack of a dedicated project staff member to oversee this work. The idea was to design and develop a meaningful newsletter that would set off a dialogue for change between the various stakeholders of the project with special emphasis on the targeted fisher communities. The objectives of this newsletter were to:

- inform all stakeholders about current happenings and progress of the project;
- create a forum for dialogue;
- educate communities on FLC self-sustainability issues and other forms of livelihoods improvement;
- provide food for thought for attitudinal changes necessary to achieve the project's main objectives.

The project recommends that, given the importance of close dialogue with the fishing communities to accept and manage change, similar projects in the future should ensure that a responsible media/communications officer is budgeted for to be employed within the PMU, conversant in all the three working languages of Sri Lanka – Sinhala, Tamil and English. The alternative is for projects to work more closely with the ministry's media unit.

### **The importance of engaging community and district-based staff**

The entire project staff was based at the PMU located at the CFHC in Colombo. It is evident from logistical and communications problems encountered with the implementation of all three project components that the project would have benefited from having full-time technical officers based in the districts, ideally at least one for each of the four geographic cluster areas.

District-based staff could have acted as the local technical officers for the project instead of using contracted staff from the D&S engineer. Moreover, they could have facilitated closer dialogue with the ADF Office, thereby implementing the communication strategy at the community level, and supported the community training programme. For future projects covering a wide geographic area, it is recommended that each technical officer be provided with a motorbike and based in the nearest FAO district office.

In addition, to improve communication, trust and a sense of ownership at the level of the fishing community, future projects should request that the community formally appoint a designated local representative. This would further strengthen the bottom-up approach<sup>62</sup> that is crucial to the success of community-based development. This representative could be assigned duties related to all aspects of the planning, design, contracting and construction, monitoring and supervision, implementation of the business planning process and capacity development of the communities.

### **The need for sustainable M&E activities**

The project operated a comprehensive M&E programme that adequately supported the needs of project management. Delays in the completion of the M&E plan, which was not in place until early 2010, were unavoidable but the whole process of M&E planning should have been started earlier, during the inception phase.

Involving CFHC, DFAR and MFARD staff in M&E activities from data collection to information presentation should have received more attention. Through this, the management of these organizations would have a greater sense of ownership of the project and also gain a good

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<sup>62</sup> This refers to working from the community upwards rather than the more usual top-down approach to management characterized by centralized decision-making, which is resource-intensive for governments.

understanding of M&E activities that need to be continued post-project. Information sharing and consultations with other M&E units/staff should have been encouraged in order to develop common M&E standards, best practices, concepts and methods. Several elements of the project's M&E plan could also have subsequently been modified to become part of an FLC planning and management system for the CFHC/DFAR to improve capacity in coordination of FLC development and management.

### **How to maintain the SANDS database**

The SANDS database facility is a powerful tool that could, if maintained properly, be used to support the implementation of a fisheries infrastructure master plan. By implementing SANDS, the project has worked to improve the management of geospatial and temporal data related to the coastal belt and management of the fisheries sector in line with the vision set out in the *Mahinda Chintana*.

There are a number of institutes and development projects that have collected information and developed initial databases relating to FLC, port and anchorage development. In addition, there are valuable data held by the Navy, Survey Department, LHI and various universities. All of the GIS units within the related marine, fisheries and coastal zone departments of the government should work together in implementing SANDS and use it as a nationwide integrated database – the first time such a system would exist to manage a wide range of technical (geophysical and modelling data), geographic, marine infrastructure and fishing fleet information for the whole country. The database could also act as an important nationwide natural-disaster mitigation tool.

Initiating the development of the SANDS database system was slow to be approved. As a result, the project ran out of time to integrate data from other agencies or sources outside of the project. An MOU is now required between all relevant agencies to help ensure the appropriate and sustainable use of the system across and by the sector. However, the project did seek to develop adequate capacity within the MFARD, specifically the NARA, to ensure the system remains in use post-project. There is a danger that without ownership of this database by the MFARD, or tendering out of the management of this database (for example, to a university that will then use it for training purposes), the system will not be effectively maintained and used for the purpose it is intended. The SANDS GIS should also be integrated with the ministry's "dashboard" strategic management system currently under development.

### **Construction and rehabilitation of FLCs**

Completion of three of the four works contracts were extended for a number of reasons, including adverse cyclonic weather conditions and, in particular, severe flooding in late 2010 and early 2011. The east coast in particular was hardest-hit, with more than 200 hours of rainfall recorded in some parts in December 2010. Aside from the obvious impact to work on site, some labourers returned to their home villages for extended periods to look after their households. There was also a serious problem with the availability of building sand for some time (as many rivers were in full flood for several weeks). Project management took a pragmatic approach to this constraint, extending without penalty the completion days of all of the works contracts. Addressing this issue without any complication demonstrates the importance of ensuring that contractors maintain accurate weather records.

A variety of approaches to contracting the construction of FLCs have been adopted by recent FLC projects. The I-FLCP chose to adopt a cluster approach in order to both generate economies of scale for potential contractors and facilitate project management in complying with onerous procurement procedures. This approach is considered to have worked well. The value of good contracting should not be underestimated on such projects, even if there were delays in construction and some quality control issues experienced, as this is common for all such projects irrespective of the approach to contracting adopted.

Adopting a flexible, non-prescriptive approach to landing site rehabilitation was essential. The approach adopted by the project resulted in the more effective and locally relevant development of FLCs when compared with the narrower, prescriptive approach adopted under some earlier projects.

Use of the traffic-light management system to monitor the status of each FLC was innovative. The MFARD should in the future prioritize the development of “yellow” sites once the identified constraints have been addressed.

Land availability for FLC development is often a contentious issue, and time is well spent with a recipient government during project formulation (as was done with the I-FLC Project) to identify potential sites where development work can be implemented with relative ease on project start-up. Problem sites with land disputes must be re-assigned to a later phase of the project.

The completion dates of all of the works contracts under the I-FLCP were extended for a number of reasons, but primarily due to adverse weather conditions (above). Any project involving significant construction works at landing sites needs to take account of seasonal changes in the weather in its work planning.

The project successfully incorporated “tsunami safe” features into the design and construction of buildings constructed in the coastal zone.

The project went to great lengths to ensure a high standard of construction of the facilities provided at selected FLCs so that high standards of hygiene and fish handling<sup>63</sup> being demonstrated to the communities may be upheld and carried forward. The Government should have a vision to replicate this approach and mentality of high standards to other landing centres around the Sri Lankan coastline. This will not only benefit the local consumers but also the tourism industry, as it is a generally established fact that:

- truly fresh fish in Sri Lanka is obtained from FLCs and not from fishing ports (which primarily service the multiday fleet) where the fish landed may be several days old;
- improvements in the quality of landed fish can help considerably to increase food security and prosperity among local fishing communities;
- tourism is an important expanding sector in the national economy after the end of conflict, providing a ready local market for the supply of locally caught fresh fish;
- tourists are more exposed to the coastal environment than in many other Asian countries as much of the tourist industry is located on or near a beach and often close to an FLC;
- tourists holidaying in a coastal environment are often interested in the fishing industry (boats, harbours) and the supply of fresh fish.

There is also the potential to enhance exports of fish directly from FLCs. This requires strict adherence to international best practice in the maintenance of hygienic practices to ensure the high quality of fish landed.

Appendix 9 provides a database of photographs, taken from the same viewpoint, of the “before” and “after” situation at a number of landing sites developed by the I-FLCP.

### **The economics of FLC development**

While this paper has discussed at length the process of assessing the institutional, social and environmental parameters that determined where and what infrastructure was developed at landing sites, little attention has been paid so far to the economics of investment.

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<sup>63</sup> Fish is generally off-loaded straight from boats driven up on the beach, carried ashore in covered baskets (ideally with some use of ice) for sorting, grading, packing/sale and distribution direct from the FLC fish auction area.

There is limited published information or analysis made in the past on this subject, in spite of the number of projects that have supported such development in the past. The FAO master plan for the sector (MFAR and FAO, 2006) provides brief cost estimates for developing FLCs and anchorages, documented in Table 5.

TABLE 5

**Cost estimate for developing fish landing centres (FLCs) and anchorages with shore facilities**

	Cost in LKR (million)	Cost in US\$
Fishers facility building	1.0–6.0	10 000–60 000
Auction shed	0.4–0.9	4 000–9 000
Sanitary facilities	0.2–0.5	2 000–5 000
Water supply and electricity	0.1–0.2	1 000–2 000
Total cost to develop FLC	2.0–9.0	20 000–90 000

*Note:* The costs and exchange rates given in this table are from 2005–06.

*Source:* MFAR and FAO (2006).

The master plan (MFAR and FAO, 2006) estimated that the total cost for developing 120 identified FLCs was LKR360 million (USD3.6 million) and that the total number of FLCs requiring development with shore facilities was up to 200, at an estimated total cost of LKR600 million (USD6 million). This equates to an average cost per landing site (based on 2005/06 figures) of USD30 000; this is close to the original project budget for FLC development of USD32 500 per site.

***The project's infrastructure budget***

The project allocated USD2.6 million for infrastructure development. Preliminary cost estimates by the D&S engineer in late 2009 suggested that the investment required for each FLC site would be in the region of USD46 500 (excluding design and supervision costs); a 43 percent cost overrun on the original budget per site referred to above. This cost rose to USD58 000 per site (including preliminary costs and some contingencies but excluding design and supervision costs) by the time the D&S engineer's estimates had been prepared in mid-2010 for all of the 33 phase 1 sites only. This is equivalent to a 78 percent cost overrun on the original budget per site.

By the time detailed engineering estimates had been received for all 38 project sites<sup>64</sup> under construction (in the four works contracts) the average investment required for each FLC site was USD61 911 (again including preliminary costs and some contingencies but excluding design and supervision costs) – a 90 percent cost overrun on the original budget of USD32 500 per site.

There were justifiable reasons for these increased costs, including inflation,<sup>65</sup> the increased specification of works at some sites, and the use of roof tiles instead of asbestos sheeting, resulting in an average increase of 52 percent in the cost of roofing for each building. In addition, for some sites in the north, there was an increased cost of working in post-conflict areas.

***Cost–benefit analysis***

Results from the needs assessment and environmental screening of landing sites provided a wealth of data to support decisions about the technical, social and environmental relevance of investing at a landing site. However, a final decision was needed on whether or how much, to invest, related primarily to the efficient use of financial resources. For this, a simple form of cost–benefit analysis<sup>66</sup>

<sup>64</sup> Two of the 41 FLC sites developed are not included in this calculation as these were simple equipment supply contracts, and one site was an office for the ADF in Mullaitivu so was not an FLC development.

<sup>65</sup> Inflation in Sri Lanka was 15.8 percent in 2007 and 22.6 percent in 2008.

<sup>66</sup> In general, a cost–benefit analysis has two main purposes: (i) to determine whether the justification for, or feasibility of, a project, decision or policy is a sound investment; and (ii) to provide a basis for comparing projects/decisions. It involves comparing the total expected cost (of a project, decision or policy) with the total expected benefits, to see whether the benefits outweigh the costs, and if so by how much.

was used by project management as a systematic way of calculating and comparing the benefits and costs of infrastructure development at each “green” FLC.

This analysis took the form of calculating the cost of the investment per beneficiary,<sup>67</sup> which was repeated at several project milestones, the most important of which were:

- following the completion of the environmental screening (when the number of direct and indirect beneficiaries was known) and when the contractors had submitted their bids to complete the works as specified by the D&S engineer;
- at the end of the project, using the same number of direct and indirect beneficiaries plus the actual cost of the works at each site (from the final account bill from the contractors).

The results of the analysis of these two data sets are provided in Appendix 10. The results illustrate the wide variation in costs per site – the highest estimated and second-highest actual cost per beneficiary being at Pollathumodera in Matara District (which involved marine works at a jetty) and the lowest being at several road construction sites in Hambantota, Batticaloa, Ampara and Chilaw Districts. In 29 out of the 40 FLCs, the final cost per beneficiary was less than the cost estimated using the contractor’s BOQ, in some cases by more than 30 percent.<sup>68</sup> Of the 11 cases (FLCs) where the final cost exceeded the estimated cost, five cases were because of a significant decrease in the actual number of beneficiaries, and in two cases the increase was negligible. The four remaining cases were at FLCs with site-specific issues that affected the final cost of the infrastructure works.

These results argue for the merits of using a “measure and pay” rather than lump-sum type works contract, because it leads to more efficient use of project funding even if it requires much more scrutiny of the contractor’s final accounts. In addition, the analysis of the data sets in Appendix 10 reinforces the importance of detailed needs assessment early on in the planning stages of FLC development in order to ensure that the target beneficiaries are accurately quantified.

Earlier data sets (not included in Appendix 10) were used, based on estimated infrastructure development costs by the D&S consultant, to assess whether the proposed building work at each site should proceed. As a general rule of thumb, except in a few justifiable cases, the project maintained an investment threshold of about LKR35 000 (USD321) per beneficiary household.<sup>69</sup> This is to say that the average cost of investment per household by the project at a specific FLC should not exceed this threshold.

In some cases, this meant that buildings had to be reduced in size, or in exceptional cases, two-storey buildings became single-storey in order to “fit” the budget. For a total of an estimated 15 350 households supported by the project, and based on the data presented in Appendix 10, the average FLC building investment cost per direct and indirect beneficiary across all 40 sites is calculated at LKR13 315 (USD 122). This is less than 40 percent of the investment threshold used by the project referred to above.

The use of cost–benefit analysis is just one method to quantify what is an appropriate level of investment at a landing site; in other words, an investment that can be managed on a financially sustainable basis. Overcapitalization with large buildings and equipment (fixed assets) must be avoided as this burdens a community with fixed costs that it has no hope of ever being able to meet; hence the reason why fuel depots and ice-making facilities were discouraged by the I-FLCP.

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<sup>67</sup> The use of a cost–benefit analysis based on a “per beneficiary household” could also have been calculated using average landings/vessel but these data were generally lacking or highly unreliable at most landing sites.

<sup>68</sup> Not taking into account any reduction in cost per beneficiary owing to an increase in the number of beneficiaries.

<sup>69</sup> This figure was determined based on a number of factors, including the total project budget and the desire to maximize the number of landing sites supported. There was no precise statistical or mathematical rule used to arrive at the threshold figure.

It is reasonably safe to assume that there is a direct relationship between the cost of building infrastructure and the cost of ongoing maintenance, excluding highly public goods such as roads and quay walls/marine structure. Large buildings will generally equate to larger fixed and variable overheads, the cost of which has to be addressed in the business planning process (see Chapter 4). Based on the approach taken by the project in promoting community participation in management, most of these costs fall onto the stakeholders (beneficiaries). The fewer there are of these stakeholders, the higher is the unit cost per beneficiary of maintaining a landing site FSC. Therefore, a cost–benefit analysis is one way of assessing and quantifying the impact of developing an FLC on the ability of the beneficiaries to meet the recurrent costs of running the FSC, assuming that the actual investment itself is a sunk cost that is not borne by the community.

### ***Comparison of infrastructure investments costs***

A comparison was made of the cost of rehabilitating, renovating or developing landing sites (i.e. excluding larger marine works) by three projects: the I-FLCP, a previous project funded by ICEIDA (completed in 2009) and an ongoing IFAD project (GreenTech, 2011). The data from a total of 59 FLCs in 13 of the 15 districts nationwide include:

- 22 sites in 12 districts from the FAO CIDA-funded project, with a combined investment cost of LKR141 million (USD1.29 million);<sup>70</sup>
- 24 sites in 6 districts constructed by the ICEIDA project, equivalent to an investment cost (adjusted for inflation up to 2010) of LKR179 million (USD1.64 million);
- 13 sites in 7 districts constructed by IFAD, equivalent to an investment cost of LKR204 million (USD1.87 million).

The results of this comparison revealed that the average (mean) investment cost of developing FLCs under each of the three projects ranged as follows:

- I-FLCP – LKR6.43 million (with a standard deviation<sup>71</sup> of LKR1.12 million);
- IFAD project – LKR15.73 million (standard deviation = LKR5.71 million);
- ICEIDA project – LKR7.46 million (standard deviation = LKR2.16 million).

The comparative analysis found no significant difference (in financial terms only) between the average costs of FLCs developed by the I-FLCP when compared with those constructed under the ICEIDA project (GreenTech, 2011). However, the average cost of infrastructure developed by IFAD was significantly higher. It remains unclear why this should be and further research is needed to identify whether the IFAD-funded FLCs are comparable with the other two projects. While drawing direct comparisons between projects necessitates a number of major assumptions (principally that “like” is being compared with “like”), it is nevertheless considered useful (as a lesson to be gained) in presenting a broad justification for the need for more donor coordination by the MFARD to ensure that common standards and cost structures are maintained.

One final issue related to the cost of developing FLCs concerns the cluster approach adopted by the I-FLCP in issuing works contracts. As stated in Chapter 3, there may have been cases where good local contractors existed that were able to implement works contracts to the standards demanded by FAO. One clear advantage of engaging smaller contractors is that their overheads are less and, therefore, so are their costs. As an example, a two-storey fisheries community centre constructed by a local contractor at Pesali in the southwest of the country funded by another donor project cost half of a

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<sup>70</sup> This figure is based on the contractors BOQ estimated costs as the final accounts costs were not available at the time the comparative analysis was made.

<sup>71</sup> This is an expression of the variance from the mean. A low standard deviation indicates that the data (FLC investment costs) are close to the mean. Conversely, a high standard deviation indicates that the data points are spread out over a large range.

nearby two-storey building built by a large (national) contractor under the I-FLCP.<sup>72</sup> Adopting an approach of engaging local (small) contractors could therefore potentially lead to significantly reduced building costs (notwithstanding build quality and cash-flow issues of using a local versus national contractor) and reinforces the importance of adopting a flexible, non-prescriptive and analytical approach to the development of fish landing sites.

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<sup>72</sup> This statement ignores the issue of directly comparing one building with another and also of how FAO would address the inherent contractual problems when working with a smaller contractor (with probably very limited cash flow). Engaging local contractors would also have likely led to increased supervision costs.

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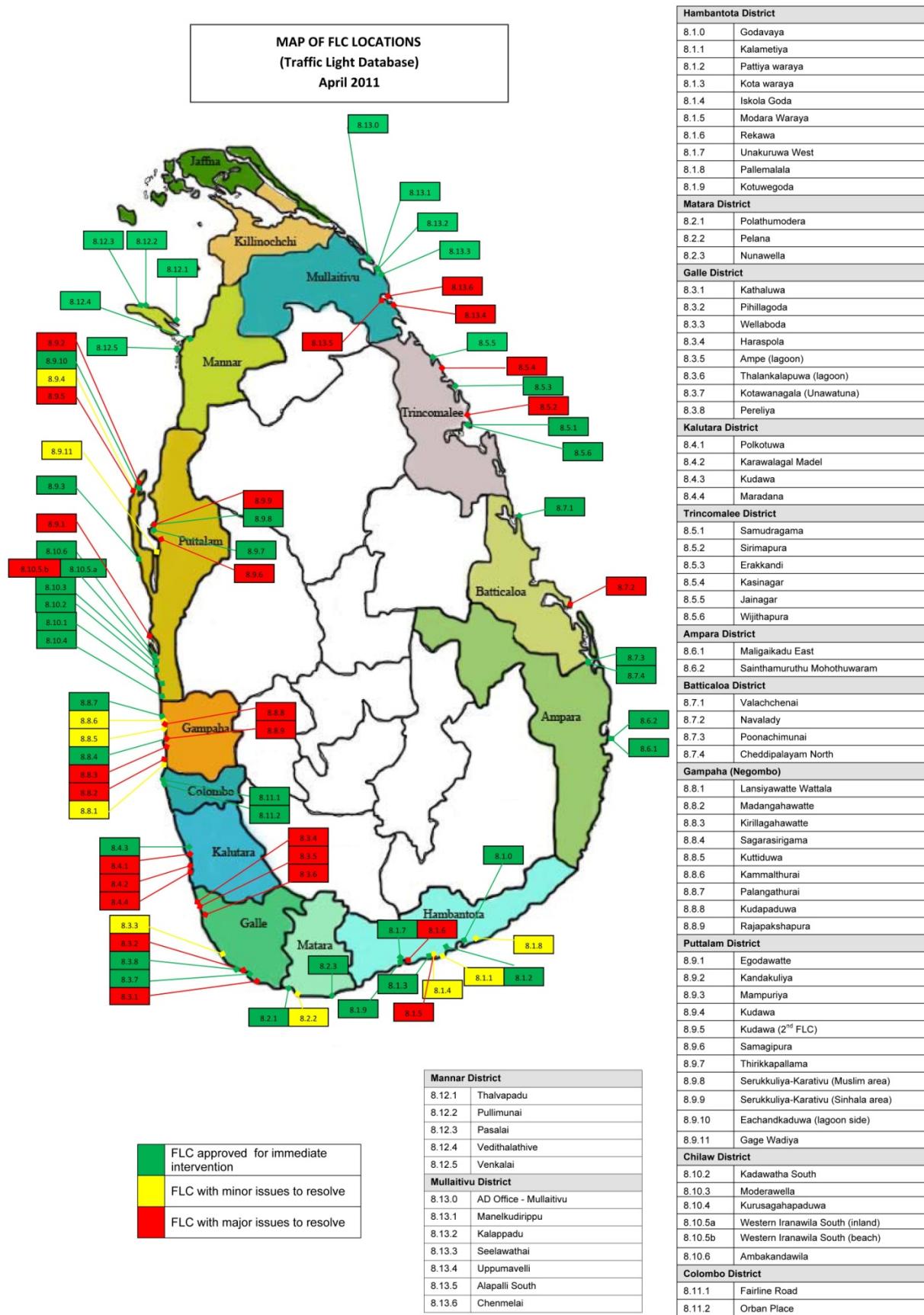
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## APPENDIX 1

### MAP OF FLC LOCATIONS (TRAFFIC-LIGHT DATABASE)



**APPENDIX 2**  
**BREAKDOWN OF PROJECT BENEFICIARIES**

<b>FLC name</b>	<b>Direct beneficiaries</b>	<b>Indirect beneficiaries</b>	<b>Estimated no. of women</b>	<b>Total</b>
Kirillagahawatte	60	125	50	185
Paranambalam (Eppamulla)	253	30	30	283
Palangathurai	54	125	35	179
Thaldeka	45	300	35	345
Kadawatha South	87	170	0	257
Moderawella	320	67	80	387
Western Iranawila South(Inland)	322	69	60	391
Ambakandawila	100	67	No records	167
Mampuriya	220	50	25	270
Thrikkapallama	55	10	30	65
Serukkuliya	600	21	No records	621
Eachankaduwa	68	24	40	92
Jai-Nagar	225	110	No records	335
Erakkandi	275	50	No records	325
Samudragama	280	150	No records	430
Vijithapura	390	No records	390 <sup>1</sup>	390
Kudawa	65	30	35	95
Pereliya	86	100	45	186
Kotawanagala	79	50	32	129
Nunawella	330	200	120	530
Polathumodera	42	60	19	102
Kotawaraya	200	200	20	400
Pattiyawaraya	19	30	No records	49
Unakuruwa	150	200	50	350
Valachenai-Pethali	198	150	No records	348
Poonachimunai	164	500	No records	664
Cheddipalayam	240	400	No records	640
Maligaikadu( Kalmunai)	1 000	500	No records	1 500
Sainthamaruthu	210	100	No records	310
Fearyar Line Rad	127	437	12	564
Auburn Place	162	262	0	424
Kudawa	65	30	35	95
Thalvapadu	492	1115	45	1 607
Pullimunai	771	1200	23	1 971
Pasalai	1 250	60	300	1 310
Vidathaitheevu	170	605	20	775
Venkalai	1 150	1 060	55	2 210
Manelkudirippu (Mulativu Town)	300	No records	150	300
Kalappadu North	252	No records	80	252
Seelawathai	156	No records	No records	156
<b>Total</b>	<b>11 032</b>	<b>8 657</b>	<b>1 816</b>	<b>19 689</b>

<sup>1</sup> Estimated from the membership of this women's society as recorded in the business plan.

Source: I-FLCP Terminal Report (FAO, 2011).

### APPENDIX 3

#### CRITERIA FOR SELECTION AND PRIORITIZATION OF FLC DEVELOPMENT

<b>Criteria for selection and prioritization of fish landing centre development</b>	<b>Percentage score</b>	
<b>Tsunami impact and emergency related criteria (15%)</b>	<b>Allocated</b>	<b>Actual</b>
8 = No impact (outside tsunami affected area and no impact recorded)		
10 = Limited impact (minor damage, facilities useable after the tsunami)		
12 = Significant impact, more than average (e.g. significant damage to infrastructure, impacted by waves)		
15= Major impact (e.g. major infrastructure loss, changes to beach, erosion by wash up/wave impact)		
<b>Subtotal</b>	<b>15%</b>	
<b>Socio-economic criteria (35%)</b>	<b>Allocated</b>	<b>Actual</b>
a. Number of boats	7%	
0 = less than 25 boats		
3 = 25 - 50 boats		
7 = above 50		
b. Number of fishermen /fish vendors/sales (number of users >150)	5%	
c. Non-availability/ underutilization of facilities that hamper economic (No facilities)	5%	
d. Fishing taking place all year = 3 ( less than 7 months = 1.5)	3%	
e. Access to markets/vendors/ice, water and fuel = 3 ( lack of inputs/few vendors visiting = 1.5)	3%	
f. Volume of fish landed at site annually and over the past five years = 3 (greater than 600 mt)	3%	
<b>Social Issues</b>		
a. Samurdhi (low income) families using the site = 3 (30% or more of households)	3%	
b. Access to hospitals/schooling/public transport = 3 (less than 3 Km distance)	3%	
c. No evidence of social/community conflicts (peaceful environment) = 3	3%	
<b>Subtotal</b>	<b>35%</b>	
<b>Technical criteria 20%</b>	<b>Allocated</b>	<b>Actual</b>
a. Stable coastline, not prone to erosion	3%	
b. Degree of sand bar formation/boulders affecting boat maneuverability	2%	
c. Marine structures at the beach affecting berthing of boats	2%	
d. Inadequacy of shore facilities provided including poor quality/ design and wrong location	2%	
e. Distance to closest landing centre already developed/harbour or anchorage	2%	
f. Land availability or alternative land availability	6%	
g. Access to main roads = 3 (less than 2 km distance)	3%	
<b>Subtotal</b>	<b>20%</b>	
<b>Environmental 10%</b>	<b>Allocated</b>	<b>Actual</b>
a Environmental sensitivity	6%	
b Availability of waste management systems	4%	
<b>Subtotal</b>	<b>10%</b>	
<b>Organizational development/community participation criteria 20%</b>	<b>Allocated</b>	<b>Actual</b>
(a) Stability of CBO (FCS/Women Association)		
(i) Fishermen registered with FCS	4%	
(ii) Services provided to the fishermen (banking, fishing gear distribution, grievance handling, group representation, involvement in dispute settlement, governance and fisheries management etc.)	3%	
(iii) Availability of funds in fixed deposits, savings and assets value ( > Rs. 500,000/-)	3%	
(iv) Women involvement in FCS management / operational services ( > 20% membership)	3%	
(b) Potential/capacity of CBO/FCS to be involved in landing site project planning, implementation and monitoring and operation and maintenance of assets to ensure sustainability	4%	
(c) Potential to involve all stakeholders in FLC management (fishers, vendors, fish handlers, net menders, fish transporters, sales agents and representatives of national/local state agencies)	3%	
<b>Subtotal</b>	<b>20%</b>	
<b>Total score</b>	<b>100%</b>	

## APPENDIX 4

SUPPLEMENTARY CHECKLIST FOR COASTAL ENVIRONMENTAL SCREENING OF  
FISH LANDING CENTRES

Completed By:																																																																											
Date:	FLC No.:	FLC Name:																																																																									
District:																																																																											
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Contacted persons (Designation and Contact details)																																																																											

			Yes	No	N/A	Unaware	Comments
2	Area - is the FLC?						
2.1	100m from the boundaries of or within any area declared under the National Heritage Wilderness Act No 4 of 1988						
2.2	100m from the boundaries of or within any area declared under the Forest Ordinance						
2.3	Coastal Zone as defined in the Coast Conservation Act						
2.4	Any erodible area declared under the Soil Conservation Act						
2.5	Any Flood Area declared under the Sri Lanka Land Reclamation and Development and Corporation Act						
2.6	60 meters from the bank of a public stream defined in the Crown Lands Ordinance and having width of more than 25 meters at any point of its course						
2.7	Any reservations beyond the full supply level of a reservoir.						
2.8	Any archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance						
2.9	Any area declared under the Botanic Gardens Ordinance						
2.11	Within 100meters from the boundaries of, or within, any area declared as Sanctuary under the Fauna and Flora Protection Ordinance						
2.12	100 meters from the high flood level contour of or within a public lake as defined in the Crown Lands Ordinance						
2.13	Within a distance of one mile of the boundary of a National Reserve declared under the Fauna and Flora Protection Ordinance						
2.14	Has the area been subject to erosion or accretion in the recent past						
2.15	Type of fauna and flora available within the FLC boundaries						
2.16	Is there evidence of fish breeding grounds adjacent to the FLC						
2.17	Evidence of pollution from oil and solid waste/ liquid waste						

Wastewater and Storm Water Management					
			Yes	No	Comments
3	Wastewater and storm water management during construction and thereafter when the landing site is in operation				
3.1	Activities generating wastewater (auction hall/ fish processing)				
3.2	Sludge management				
3.3	Clearing of debris during construction				
3.4	Does the project envisage laying of pipelines				
3.5	Does the project envisage any tunnelling activities				
3.6	Is there a mechanism for disposal of dredge and fill material/ solid and liquid waste				
3.7					
4	Waste Management		Yes	No	Comments
4.1	Waste material disposal (solid and liquid) from fish handling and marketing/fish processing/auction shed				
4.2	Used oil and used filters				
4.3	Used oily/waste rags				
4.4	Used batteries				
4.5	Metal scrap				
4.6	Used antifreeze				
4.7	Painting and paint removal operations				
4.8	Disposal of used fish nets/ fish waste				
4.9	Equipment cleaning and spent solvents				

Storage Tanks And Spill Prevention Control and Counter Measures					
			Yes	No	Comments
5					
5.1	Underground storage tanks				
5.2	Above ground storage tanks				
5.3	Spill prevention, control, and countermeasures and emergency response				
5.4	Pollution prevention measures				

Institutional Aspects						
<b>6</b>	<b>Name of the Fisheries Cooperative Society</b>	<b>Total</b>			<input type="checkbox"/>	
6.1	Number of members (males/females)				<input type="checkbox"/>	
6.2	Date of Registration				<input type="checkbox"/>	
6.3	Survey plan for public lands	<b>Yes</b>	<b>No</b>	<b>Availability of documents</b>	<b>Yes</b>	<b>No</b>
6.4	Average attendance of monthly meetings				<input type="checkbox"/>	
6.5	Number and type of boats owned by the members				<input type="checkbox"/>	
6.6	Multi Day				<input type="checkbox"/>	
6.7	One day boats with inboard engine				<input type="checkbox"/>	
6.8	FRP				<input type="checkbox"/>	
6.9	Traditional Orus				<input type="checkbox"/>	
6.10	Theppams				<input type="checkbox"/>	
6.11	Motorized Traditional Orus				<input type="checkbox"/>	
6.12	Number of outsiders operating boats				<input type="checkbox"/>	
6.13	Type of services provided to members				<input type="checkbox"/>	
6.14		<b>Yes</b>	<b>No</b>	<b>Notes</b>	<input type="checkbox"/>	
6.15					<input type="checkbox"/>	
6.16	Loan schemes				<input type="checkbox"/>	
6.17	Facilities provided				<input type="checkbox"/>	
6.18	Nursery (Pre-school)				<input type="checkbox"/>	
6.19	Children's park				<input type="checkbox"/>	
6.20	Village bank				<input type="checkbox"/>	
6.21	Training venue				<input type="checkbox"/>	
6.22	Ner sales centre				<input type="checkbox"/>	
6.23	Fish sales centre				<input type="checkbox"/>	
6.24	Ice distribution				<input type="checkbox"/>	
6.25	Fish processing centre				<input type="checkbox"/>	
6.26	Engine repair workshops				<input type="checkbox"/>	
6.27	Health facilities				<input type="checkbox"/>	
6.28	Training facilities				<input type="checkbox"/>	
6.29	Type of training				<input type="checkbox"/>	
6.30	Others (please specify)				<input type="checkbox"/>	

		Book keeping	
		Availability of documents	Yes
		No	
6.31			
6.32	Accounts		
6.33	Total amount of savings (Rs)		
6.34	Minutes of monthly meetings		
6.35	Management of common facilities (cost recovery)		
6.36	Seasonality		
6.37	Time of fishing (Day/ Night)		

		Some Other Essential Information			Comments	
		Yes	No	N/A	Unaware	
7						
7.1	Does the project site require any reclamation of land, wetlands, clearing of forest or felling of trees					
7.2	Does the project envisage any resettlement					
7.3	Present land use					
7.4	Present ownership of the project site					

[Back to Office Notes](#)

## APPENDIX 5

## INFRASTRUCTURE ASSET DATABASE

No.	I-FLC Project Code	Project Needs Assessment Ref. No.	District	Name of the CBO/landing centre	FSC Buildings + Offices						Utility, Waste & Fuel	
					Building	Net mending hall	Community centre	Offices for FCO	Water supply	Toilet block	Fuel storage tank	
1	IIAM02/PATT/WEL/05001L	8.1.2		Pattiya waraya - Ambulonto								
2	IIAM03/KOT/KAH/05603L	8.1.3	Hambantota	Kotawaraya - Kallandamodeera								
3	IIAM07/UNAKUNA/05305L	8.1.7		Unakarawa								
4	IIAM09/KOTU/TAN/05403L	8.1.9		Kotuwegoda-Tangalle Thutupilla								
5	MAT01/POLA/MIR/04902L	8.2.1	Matale	Pollathumodera								
6	MAT03/UNUNA/GAM/04502L	8.2.3	Nuwara Eliya		1	1			1	1		1
7	GAL07/KOT/ALINA/04012L	8.3.7	Galle	Kotawangala(UNAWATUNA)	1				1			1
8	GAL08/PEREHIK/03705L	8.3.8	Pereiyā		1		1		1	1		1
10	KAL03/KUDA/MAG/02702L	8.4.3	Katubara	Kudawa		1			1	1		1
11	TRI03/RAK/TRU/11707L	8.5.3		Erikandi								1
12	TRI05/AIN/KUC/1208L	8.5.5	Tribemmale	Iainagar- Kuchehuveli					1			1
13	TRI01/SAMU/TRU/02085L	8.5.1		Samudragama-Simukadai	1	1			2	1		1
14	TRI06/VICU/TRU/11801L	8.5.6		Vigithapura		1			1			1
15	AMP01/MAJ/KA/09507L	8.6.1	Amperai	Maligakadu			1		1	1		1
16	AMP02/SAIN/KA/09311L	8.6.2		Sainthamarathu-Mohothuwaram	1	1			3	1		1
17	BAT01/VALA/VAL/10604L	8.7.1		Vahachennai-Edukai-Nachiththurai		1	1		1			1
18	BAT03/POON/MAN/11002L	8.7.3	Batticaloa	Poonachimunai								
19	BAT04/CTED/KAL/11303L	8.7.4		Chedipalayam					1		1	1
21	QAM04/SAGA/USW/02201L	8.8.4		Sagarasirigama(Epanulla),J-a-ela	1				1		1	1
22	QAM07/PALAKAM/01010L	8.8.7	Gampaha+ Negombo	Pelangathurai	1	1	1		1	1		1



## APPENDIX 6

## GOVERNMENT OFFICER TRAINING COURSES AND WORKSHOPS

Training course	Completed	No. participants	Days/ course	No. training days	No. participants	
					Males	Females
Project M&E Workshop	Nov-2010	78	1.5	117	65	13
Clean Harbours Study Tour - India	Dec-2010	2	3	6	2	0
Project Staff training in FAO Information Management System (FPMIS)	Jan-2010	3	3	9	2	1
MIKE 21 Technical Engineering including DHL training	Feb-March-May-June-July-2010	5	30	150	3	2
Social Mobilization (Course #1)	May-2010	31	3	93	27	4
Social Mobilization (Course #2)	Jul-2010	48	3	144	41	7
Social Mobilization (Course #3)	Jul-2010	41	3	123	40	1
Project Management & Baseline Studies	May-2010	20	4	80	13	7
Contract Management	Jun-2010	30	3	90	21	9
Design of Harbours and Improvements to Fish Landing Centres	Jun-2010	42	2	84	37	5
Environmental & Coastal Management	Jun-2010	54	2	108	51	3
CFHC Organization Development – Job Descriptions & Improve Employee Performance#1	Jul-2010	18	2	36	12	6
M&E Training	Jun-2010	28	2	56	18	10
Livelihoods Development (SLA)	Jul-2010	88	3	264	80	8
Sustainable Livelihood and Enhancement and Diversification(SLED) Training for project Staff	Jul-2010	8	6	48	5	3
M.Sc. Financial Mathematics (MFARD staff member)	Jul-2010	1		0		1
M.Sc. Project Management (CFHC staff member)	Jul-2010	1		0	1	
M.A. Economics (DFAR staff member)	Feb-2011	1		0	1	
FAO procurement training	Aug-2010	3	2	6	2	1
Workshop on preparation of Business Plans#1	Aug-2010	24	1	24	22	2
Workshop on preparation of Business Plans#2	Sep-2010	25	2	50	22	3
Workshop on preparation of Business Plans#3	Dec-2010	14	1	14	10	4
Workshop on preparation of Business Plans#4	Jan-2011	20	1	20	17	3
CFHC Organization Development – Job Descriptions & Improve Employee Performance#2	Sep-2010	55	2	110	41	14
Training of Trainers Course#1 (Sinhala)	Nov-2010	29	5	145	23	6
Training of Trainers Course#2 (Tamil)	Dec-2010	27	5	135	25	2
GIS and Remote Sensing workshop	Dec-2010	23	1	23	19	4
technical training	Dec-2010	7	2	14	6	1
Health and safety for fishers on sea and land- India Workshop	Dec-2010	2	2	4	2	0
Port Management Course – Philippines#1	Feb-2011	10	5	50	9	1
Project Proposal writing	Jan-1900	15	2	30	14	1
Project Management Application Using MS Project	Feb-2011	12	5	60	10	2
SANDS advance technical training	Mar-2011	6	2	12	4	2
Workshop on preparation for business plans	May-2011	28	1	28	23	5
Tamil language course	Apr-2011	42	27	1134	18	24
Senior Management Study tour - Fishery Complex, General Santos Philippines	Jul-2011	5	4	20	4	1
Port Management Course – Philippines#2	Jul-2011	10	5	50	9	1
<b>Total</b>		<b>856</b>	<b>145.5</b>	<b>3 337</b>	<b>699</b>	<b>157</b>

## APPENDIX 7

## RESULT FRAMEWORK

Design summary	Indicators	Data sources	Assumptions
<b>Goal:</b> The livelihoods of fishers and fishing communities in tsunami affected areas improved	<ol style="list-style-type: none"> <li>Number and percentage of fishers and communities that attribute, livelihood improvement to project activities carried out in their communities.</li> <li>Reduction on post-harvest losses for commercially important species landed by fishermen operating from rehabilitated landing centres and improvement in fish quality.</li> <li>Increased market price for fish from rehabilitated landing centres</li> <li>Increased income for fishers landing fish at rehabilitated landing centres</li> <li>Improved quality of environment at rehabilitated landing centres</li> </ol>	<ul style="list-style-type: none"> <li>Beneficiary assessment towards the end of the Project</li> <li>Baseline and evaluation study covering Project sites where infrastructure, co-management regime and/or training will be (has been) (re-)built/ practiced/ conducted that can have an impact on fish quality, reduction of post-harvest losses and other positive effects</li> </ul>	<ul style="list-style-type: none"> <li>Positive effects caused by project interventions are relevant and meaningful for fish folks' improvement of livelihoods</li> <li>no deterioration of macro-economic conditions</li> <li>Abatement of conflict /improvements in security in conflict zone</li> <li>Sustainable mgmt. of resources</li> </ul>
<b>Outcome:</b> Rehabilitated landing centres functioning well and self-sustaining as a result of stakeholder participation in management	<ol style="list-style-type: none"> <li>No of FLC where rehabilitated infrastructure is being used by targeted groups</li> <li>Degree (expressed in percentages) to which new/ rehabilitated infrastructure is being used by the target group as expected.</li> <li>No and % of rehabilitated/constructed FLCs where fees are collected by users as recommended by the Project</li> <li>No of FLC management/user groups in each maturity category, and % distribution across categories</li> <li>No of Project FLCs where post-construction maintenance of infrastructure is practiced according to recommendations made by D&amp;S Engineer.</li> <li>Degree to which government capacity to (i) organize rehabilitation and (ii) support participatory management of landing centres, is applied</li> <li>Evidence that the DFAR and/or CFHC have/has considered the project's recommendations related to participatory management regimes.</li> <li>DFAR and/or CFHC have/has taken decisions based on the project recommendations on participatory management regimes.</li> <li>Degree to which CFHC and DFAR district staff prepare reports covering Project related questions and issues</li> </ol>	<ul style="list-style-type: none"> <li>quarterly reports by FIs and/or co management committee meeting reports</li> <li>periodic surveys of project stakeholders/beneficiaries conducted by Project's Community Participation Expert and M&amp;E/IT Officer</li> <li>tri-partite evaluation report</li> <li>workplans by FLC development unit in CFHC</li> <li>study by all professional project staff (organized by CTA and M&amp;E/IT Officer) on the application of newly created capacities of CFHC, MFAR and DFAR staff (incl. results of post-training surveys) and decisions taken on Project recommendations</li> </ul>	<ul style="list-style-type: none"> <li>All barriers that could prevent the expected beneficiaries from using the new infrastructure have been anticipated and dealt with by the project</li> <li>GoSL decision makers remain committed to transfer responsibilities related to infrastructure to user groups</li> <li>Community cohesion allows consensus and participation of key stakeholders</li> <li>Trainers trained by the Project conduct effective training for FLC co-management &amp; user groups (a critical assumption that needs monitoring if the training at field level, i.e. the training provided by trainers trained under the project, is not financed by the Project)</li> <li>Environment is conducive to the application of what has been imparted through training</li> </ul>

Design Summary	Indicators	Data Sources	Assumptions
3 Institutional frameworks for community participation in harbour management developed and implemented (and livelihoods improved [should be eliminated as it is not a project output but a desired impact])	<p>3.1 No and type of different participatory co-management regimes developed for landings sites.</p> <p>3.2 Guidelines, rules and regulations for FLC co-management regime(s) and CBOs' participation drafted and submitted for approval</p> <p>3.3 Type and no of project supported co-management groups/committees established in FLCs.</p> <p>3.4 No of fish landing sites where required capacity building of key stakeholders (incl. user groups) in management has been completed</p> <p>3.5 No of co-management groups/committees which include broad representation including women, poor and marginalized groups.</p> <p>3.6 No of Project FLCs where co-management groups/committees have been exposed to the infrastructure maintenance procedures (recommended in DSC Manual)</p> <p>3.7 No of hand-overs of rehabilitated FLCs to co-management groups/committees</p> <p>3.8 Recommendations submitted to GoSL on the promotion of successful and promising regimes identified through in-depth evaluation of different participatory co-management regimes implemented under the Project and by other projects (e.g. IFAD)</p>	<ul style="list-style-type: none"> <li>Project's strategy paper on participatory co-management regimes covering legal aspects</li> <li>entries in FLC profiles originating BTO-reports</li> <li>reports prepared by Project's Community Participation Expert</li> <li>quarterly reports by FIs and/or co management committee meeting reports</li> <li>government and community management plans and reports</li> <li>individual training reports</li> <li>summary reports by training provider</li> <li>in-depth evaluation of different participatory co-management regimes</li> </ul>	<ul style="list-style-type: none"> <li>Willingness of users to participate in co-management regimes and take responsibility for adequate operation and maintenance</li> <li>Supportive legal frameworks exist</li> <li>Suitable training providers can be identified</li> </ul>

**APPENDIX 8**  
**TRAFFIC LIGHT DATABASE (“YELLOW” AND “RED” SITES)**

<b>I-FLC Project Code</b>	<b>District</b>	<b>Comments/Reasons for rejection</b>
HAM01/KALA/KAL/05701A	Hambantota	Development of anchorage beyond the project budget (I-FLCP prepared investment plan only)
HAM04/ISKO/KAH/05605L	Hambantota	Road development completed by the Provincial Council
HAM08/PALL/HAM/06003L	Hambantota	Lagoon site - very limited investment needed
MAT02/PELA/MIR/04901L	Matara	Environmentally sensitive site (dense coastal vegetation) and no access road
GAL03/WELL/DOD/03803L	Galle	Inactive society
GAM01/LANS/WAT/02301L	Gampaha/Negombo	No state land (land issue to be resolved)
GAM02/MADA/WAT/02304L	Gampaha/Negombo	No state land (land issue to be resolved)
GAM05/KUTT/TOW/0140L	Gampaha/Negombo	Environmentally sensitive site
GAM06/KAMM/KAM/01201L	Gampaha/Negombo	Feasibility study required for fishing gear centre
PUT04/KUDA/KAL/13001L	Puttalam/Chilaw	No infrastructure requirements
PUT11/GAGE/WAN/13201L	Puttalam/Chilaw	Late request for support via AD-Puttalam
HAM05/MODA/KAH/05602L	Hambantota	No infrastructure requirements
HAM06/REKA/REK/05505L	Hambantota	No available land for development
GAL01/KATH/KAT/04101L	Galle	Non-functional society and removal of reef is not possible due to CCD legislation
GAL02/PIHI/UNA/O4002L	Galle	Disorganized society
GAL04/HARA/BAL/03415L	Galle	No available land for development
GAL05/AMPE/BAL/00000	Galle	Environmentally sensitive site
GAL06/THALA/BEN/03305L	Galle	Non-functional society(FCS) and high cost
KAL02/KRAW/BER/02602L	Kalutara	To be developed by IFAD with MFARD approval
KAL04/MARA/BER/02601L	Kalutara	To be developed by IFAD with MFARD approval
TRI02/SIRI/TRI/1108L	Trincomalee	Private land
BAT02/NAVA/MAN/11005L	Batticaloa	Non-operational landing centre
GAM08/KUDA/KAM/01301L	Gampaha/Negombo	Non-operational landing centre
GAM09/RAPA/JAE/00000	Gampaha/Negombo	Not recommended due to scattered nature of development - cannot cater to individual needs
PUT01/EGOD/CHI/13404L	Puttalam/Chilaw	Land issue (land needs to be reclaimed first by the Provincial Government)
PUT02/KAND/KAL/13006L	Puttalam/Chilaw	Institutional issue and social conflict at the centre
PUT09/SERU/WAN/13207L	Puttalam/Chilaw	Coastal erosion issue (CCD rejected the approval)
CHI05b/IRAN/NTH/13702L	Chilaw	Private land
PUT06/SAMA/WAN/00000	Chilaw	Work completed by NGO (IUCN)
PUT05/KUDA/KAL/12804L	Puttalam/Chilaw	Due to environmental reasons
TRI04/KASI/KUC/12113L	Trincomalee	lack of commitment from the community.
KAL01/POLK/BER/02502L	Kalutara	Cancelled by the MFARD
GAM03/KIRI/JAE/00000	Gampaha/Negombo	No commitment from the society
None assigned	Mullativu	To be implemented under another project
None assigned	Mullativu	To be implemented under another project
None assigned	Mullativu	To be implemented under another project

**APPENDIX 9****BEFORE AND AFTER SITUATION OF LANDING SITES****BEFORE**

Paranambalama

**AFTER**

Pethalai



Taldeka



Mampuriya



Eachchankaduwa



Irrakkakandi



Jayanagar



Kudawa



Sainthamaruthu



Modarawella



Maligaikadu



Pereliya



Nunawella



Vijithapura



Samudragama



Fairline Road



Palangaturai



Polathumodera



Kotawanagala



## Auburn side



## Pulliyamunai



## Pesalai



## Vedithalathiu



**Mullaithivu AD Office**



**Manelkudirippu**



**Kallappadu North**



**Seelawathai**



**APPENDIX 10**  
**COST–BENEFIT ANALYSIS DATABASE**

District	Name of landing centre <sup>1</sup>	Expected no. beneficiaries	Actual no. beneficiaries	Contractors BOQ/expected no. beneficiaries (LKR)	Final cost/actual no. beneficiaries (LKR)
Hambantota	Pattiyawaraya - Ambalantota	300	49	5 000	16 179
Hambantota	Kotawaraya -Kahandamodeera	100	400	13 400	646
Hambantota	<i>Unakuruwa</i>	200	350	10 200	2 452
Hambantota	kotuwegoda-TangalleThutopala	260	470	33 000	7 911
Matara	<i>Pollathumodera</i>	150	102	74 303	40 541
Matara	<i>Nunawella</i>	400	530	19 913	9 413
Galle	Kotawanagala (Unawatuna)	100	129	34 200	12 279
Galle	Pereliya	200	186	41 500	31 894
Kalutara	<i>Kudawa</i>	350	95	17 443	56 306
Gampaha/ Negombo	<i>Sagarasirigama(Epamulla), Ja-ela</i>	115	283	36 578	10 809
Gampaha/ Negombo	<i>Palangathurai</i>	400	179	15 427	24 781
Puttalam/ Chilaw	<i>Mampuriya</i>	400	270	20 133	12 226
Puttalam/ Chilaw	<i>Thirikkapallama - wanathavilluwa</i>	100	65	17 405	14 992
Puttalam/ Chilaw	<i>Karativu -Serukkuliya (Muslim area)</i>	400	621	3 750	1 042
Puttalam/ Chilaw	Eachandkaduwa (Kalpitiya-lagoon side)	92	92	41 047	22 924
Chilaw	Thaldeka	150	345	46 729	12 859
Chilaw	Kadawatha South	250	257	27 809	19 844
Chilaw	Modarawella	260	387	28 927	13 178
Chilaw	Kurusagahapaduwa	250	665	10 068	2 701
Chilaw	Western Iranawaila South (inland)	300	391	3 329	1 358
Chilaw	AmbakandawilaWelakandi	200	167	31 441	22 404
Colombo	Fayar Line Road	327	564	28 242	9 740
Colombo	Auburn Place	262	424	35 248	15 958
Trincomalee	Erakkandi	1 200	325	1 541	4 150
Trincomalee	Jainagar- Kuchchuveli	350	335	10 414	10 528
Trincomalee	Samudragama-Sinnakadai	430	430	21 069	24 877
Trincomalee	Vigithapura	640	390	8 352	15 074
Ampara	Maligaikadu	800	1 500	6 884	2 644
Ampara	Sainthamaruthu-Mohothuwaram	400	310	15 622	14 973
Batticaloa	Valachchenai-Ethukal-Nadhththurai	400	348	17 426	17 614
Batticaloa	Poonachimunai	500	664	8 443	1 538
Batticaloa	Cheddipalayam	400	640	3 827	6 448
Mannar	Thalvapadu	1 607	1 607	4 365	5 461
Mannar	Pullimunai	1 971	1 971	3 983	3 458
Mannar	Pasalai	1 310	1 310	5 802	5 185
Mannar	Vidathaitheevu	775	775	11 871	8 134
Mannar	Venkalai	2 210	2 210	1 453	2 921
Mulativu	Manelkudirippu (Mulativu Town)	300	300	27 083	25 714
Mulativu	Kalappadu North	252	585	32 837	13 223
Mulativu	Seelawathai	156	156	29 167	24 397

<sup>1</sup> CFHC-recommended FLCs in bold italics.

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