EMERGENCY OPERATIONS AND REHABILITATION DIVISION

Integrated programme for the rehabilitation of the fishery sector in the tsunami affected districts of Hambantota, Ampara and Batticaloa

OSRO/SRL/505/ITA
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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

APSRAC	State Remote Sensing Application Centre
ASIA	Assocazione per la Solidarieta Internazionale in Asia
AUSAID	The Australian Government's Overseas Aid Programme
BDC	Business Development Centre Network
BoQ	Bill of quantities
CIPSI	Coordinamento di Iniziative Popolari di Solidarieta Internazionali
DFAR	Department of Fisheries and Aquatic Resources
DFID	UK Department for International Development
DSS	Decision Support System
FAO	Food and Agriculture Organization of the United Nations
FIIT	FAO's Fishing Technology Service
FRP	Fibre Resin Plastic
GIS	Geographic Information System
GUS	Gruppo di Umana Solidarieta
ICEI	Istituzione Cooperazione Economica Internazionale
INGO	International Non-Governmental Organization
INRIS	Integrated Natural Resource Information System
IPID	Institute for Participatory Interaction in Development
ISCOS	Istituzione Sindacale per la Cooperazione allo Sviluppo
JICA	Japan International Cooperation Society
LoA	Letter of Agreement
MFAR	Ministry of Fisheries and Aquatic Resources
MoA	Ministry of Agriculture
NACA	Network of Aquaculture Centres in Asia-Pacific
NAQDA	National Aquaculture Development Authority of Sri Lanka
NESED	North East Socio-Economic Developers
NGO	Non-Governmental Organization
NIFNE	National Institute for Fisheries and Nautical Engineering
STREAM	Regional Initiative founded by NACA, DFID,FAO,VSO & AUSAID
UCODEP	Unita e Cooperazione per lo Sviluppo dei Popoli
UN	United Nations
UNDP	United Nations Development Programme
VSO	Voluntary Service Overseas

EXECUTIVE SUMMARY

The Indian Ocean earthquake that struck on 26 December 2004 unleashed tsunamis on the coastlines of more than a dozen nations in Southeast Asia, Africa and the Middle East. The Democratic Socialist Republic of Sri Lanka's coastline was severely damaged by the tsunami, with 14 of the country's 28 districts affected. More than 35 000 people were killed and an estimated 500 000 people were rendered homeless. A large number of these internally displaced people had been involved in farming- and fishing-related activities before the tsunami, and were left without the capital or the assets to re-engage in productive labour. The tragedy left large numbers of survivors with no means of livelihood and it was imperative to get the farmers farming and the fishers fishing as soon as possible.

In response to the 2005 United Nations Flash Appeal, the Cooperazione Italiana of the Government of the Republic of Italy contributed US$5 628 420 to the Food and Agriculture Organization of the United Nations (FAO) project OSRO/SRL/505/ITA, entitled "Integrated programme for the rehabilitation of the fishery sector in the tsunami-affected districts of Hambantota, Ampara and Batticaloa". Following the approval of two no-cost extensions, project activities were implemented from 1 May 2005 to 31 December 2007 and utilized 99 percent of the funds provided by Cooperazione Italiana.

The objective of FAO's post tsunami emergency programme in the Democratic Socialist Republic of Sri Lanka was to address the immediate needs of fishing and farming communities and promote a sustainable recovery within the sectors. In particular, the project aimed to: (i) repair damaged boats and engines; (ii) distribute new engines and fishing gear; (iii) deliver livestock inputs and encourage enhanced animal rearing practices; (iv) construct underground water harvesting units; (v) rehabilitate irrigation canals and earth bunds; (vi) establish homestead gardens and community plan nurseries; (vii) upgrade boatyard facilities; (viii) carry out multi-sectoral training components in order to strengthen local capacities; and (ix) improve national and district-level coordination mechanisms through information sharing.

The project was successful in supporting the renewal of fishing and farming operations for over 7 500 families. Timely funding by the Cooperazione Italiana enabled the repair of 838 boats and 138 engines, greatly contributing toward an increase in the daily fish catch. Moreover, the project delivered 715 fishing gear kits, while providing 1 800 fishers with training materials on the principles of boat stability and safety at sea. The infrastructure rehabilitation component stipulated the construction of mushroom production units, one freshwater prawn hatchery station, two ice storage facilities, one grain storage house, one fish processing centre and one fisheries community centre. In terms of strengthening local capacities, the project trained beneficiaries in different areas including self-employment initiatives, entrepreneurship, alternative income-generation, nutrition and food preparation, handloom production, carpentry and plumbing.

Overall, the project has been instrumental in supporting beneficiaries from the most vulnerable farming and fishing communities in the districts of Hambantota, Ampara and Batticaloa to resume fishing operations, crop and livestock production, thereby enhancing food security and reducing dependency on food aid.

FAO TSUNAMI PROGRAMME RESPONSE

On 26 December 2004, an earthquake off the west coast of northern Sumatra led to the most destructive series of tsunamis recorded in history, killing over 220 000 people and affecting the livelihoods of more than 1.4 million people in 14 countries around the Indian Ocean. The tsunami had the greatest impact on rural coastal communities, many of which were already living in poverty, vulnerable and highly dependent on severely depleted and over-fished natural resources and degraded ecosystems. Thanks to the generous, rapid and programmatic support of donors[1] and in the context of the UN Indian Ocean Earthquake-tsunami Flash Appeal, FAO implemented a large coordinated response aiming to protect, restore and enhance the livelihoods of affected coastal rural populations. Upon specific requests from the affected countries, FAO structured its emergency and rehabilitation response along four outcomes: (i) the recovery of fisheries; (ii) agriculture and (iii) forestry based-livelihoods; and (iv) the overall coordination of support to national authorities and other actors working in the above areas of intervention.

Within this framework, the tsunami response team (located at headquarters, in the region and the field) coordinated the deployment of technical and operational experts in the Republic of Indonesia, the Democratic Socialist Republic of Sri Lanka, the Kingdom of Thailand, the Union of Myanmar, the Republic of Maldives, the Republic of Seychelles and the Somali Republic. With an overall budget exceeding US$66 million (distributed among 65 projects), the programme primarily focused on the replacement of lost assets: boat building and repairs, supply of boat engines, fishing gear and fish processing equipment, rehabilitation of aquaculture and fish farming inputs, land reclamation and salinity monitoring, provision of seeds, fertilizers, small farm machinery, livestock and veterinary services and tree seedlings. Guidance on strategic planning, technical coordination and capacity building issues with emphasis on information exchange is an ongoing challenge given the multidimensional and complex nature of the crisis as well as the large number of actors involved. Together with key partners, FAO aims to ensure a smooth transition from the emergency phase to recovery, longer-term reconstruction and development work, bridging gaps and advocating for the sustainable management of natural resources, thus helping people rebuild their livelihoods better than before.

[1] Partly through the Special Fund for Emergency and Rehabilitation Activities-SFERA, as well as through funding from FAO's own resources through the Technical Cooperation Programme (TCP).

1 SUMMARY OF INTERVENTION

1.1 Planned activities

The overall objective was to assist the Government of the Democratic Socialist Republic of Sri Lanka in its efforts to protect, rehabilitate and enhance the livelihoods of tsunami-affected coastal communities in a sustainable manner. The objectives were to be achieved through a short to medium timeframe.

In the short-term, the project was designed to provide immediate assistance to safeguard the livelihoods of affected fishers, thus enabling a prompt resumption of fishing operations and income-generating activities. In the medium-term, the project was designed to support the development of a national fisheries rehabilitation plan.

In line with this approach, the specific objectives of the first twelve months (short-term) were as follows:

- to repair and replace small and medium sized fishing vessels, engines and fishing gear;
- to distribute aquaculture related inputs;
- to rehabilitate small-scale infrastructure for aquaculture activities;
- to rehabilitate small-scale fish post harvest facilities and infrastructure; and
- to develop a plan for the rehabilitation of small fishing harbours and landing sites.

Over the following 12 months (medium-term) the objectives were as follows:

- to consolidation a medium-term rehabilitation programme;
- to provide technical advice and facilitate coordination among interested stakeholders;
- to conclude the repair and replacement of small and medium sized fishing vessels;
- to finalize the distribution of engines, fishing gear, and inputs for aquaculture production;
- to complete the rehabilitation of small-scale aquaculture infrastructure, post harvest facilities, fishing harbours and landing sites; and
- to implement an Integrated Coastal Zone Conservation and Management Plan in selected areas, supported by alternative employment generation (aquaculture and non fishery-based activities) together with bolstering food production for tsunami-affected communities.

1.2 Adjustment of activities during project implementation

1.2.1 Overview

The project document and budget has been subjected to successive amendments, which were proposed and approved in agreement with the donor and the relevant government counterparts. The amendments are as follows:

First amendment: as per the approved Operational Plan for the initial 12 months in line with the decision of the second project Steering Committee of 14 October 2005.

Second amendment: as per the approved Operational Plan for the following 12 months in line with the decision of the third project Steering Committee of 28 June 2006.

Third amendment as approved by the donor in May 2007.

1.2.2 First amendment

The first amendment stipulated the following:

- A reduction in funding for the procurement of expendable equipment such as engines, spare parts and boat repair materials. This modification was introduced in light of an increase in resources under the overall FAO tsunami emergency and rehabilitation programme in Sri Lanka.

- A reduction in funding for the procurement of non-expendable equipment such as fishing gear and outboard engines, and the discontinuation of activities such as the distribution of ice-plants, mobile vans and the repair of boats. This was dictated by similar commitments by the United Nations Development Programme (UNDP) and the Japan International Cooperation Society (JICA), throughout project areas.

- An increase in the funding of contracts for livelihood development activities through national and international non governmental organizations (NGOs).

- The amendment envisaged the discontinuation of the construction of small fishing harbours and landing sites**,** as per the priorities that were established in collaboration with the Ministry of Fisheries and Aquatic Resources (MFAR) and other competent authorities.

- The creation of a new component to bolster the capacities of the fisheries sector in general, and the Ministry of Fisheries in particular paving the way for improved regulatory procedures. These included adhering to fishing vessel construction standards, improved safety-at-sea measures and more secure working conditions for boat yard workers.

1.2.3 Second amendment

The second amendment stipulated the following:

- Adjustments to the budget lines of both international staff (decrease) and national staff (increase), as well as minor adjustments to the supporting costs of casual labour and travel requirements.

- A further reduction to the procurement and distribution of inputs under budget line expendable equipment including engines, spare parts and boat repair materials.

- The insertion in the project budget of costs related to MFAR's new capacity building component under "expendable equipment, non-expendable equipment, contracts and training".

- The addition of a new project component for the installation of new inboard engines, reflected in the budget under "expendable equipment and non-expendable equipment".

- The inclusion of a new component for the construction of a freshwater prawn hatchery station, reflected in the budget under "expendable equipment, non-expendable equipment and contracts".

- The discontinuation of activities concerning strengthened co-management between the Government and ten selected communities to limit coastal resource capacity, as per objective three. The reformulation of the activity is as follows: "Development of a Decision Support System (DSS) for the planning and implementation of activities for aquaculture development".

The second amendment stipulated the reallocation of funds between certain budget lines in order to accommodate the following:

- Procurement of expendable and non-expendable equipment for INGOs livelihood components.

- Provision of expendable equipment for aquaculture development.

- Contingency planning to account for unexpected expenses.

- Contracts for earth and well excavation works in support of the activities implemented by INGOs.

- Training for the livelihood component in support of the activities implemented by INGOs.

1.2.4 Third amendment

The third amendment stipulated the following:

- A four month no-cost extension prolonging project activities to 31 August 2007.
- The introduction of further budget amendments reflecting the extension of project activities as well as an update of the estimated expenses.

For a detailed history of the successive budget amendments, kindly refer to Annex 2.

2 OVERVIEW OF ACTIVITIES

Planned activities	Status of activity implementation	Achievements	Comments
Preparatory activities: implementation of livelihoods analyses in 14 villages. Specifically: the signing of the Letter of Agreement (LoA) with the Institute for Participatory Interaction in Development (IPID) and the STREAM Initiative enabled the implementation 14 livelihood studies.	The LoAs with STREAM and IPID were signed and completed. All livelihood analyses have successfully guided INGOs in the preparation of the LoAs with FAO for the implementation of livelihood rehabilitation activities.	No major delays were recorded during the implementation of the surveys, with the exception of studies implemented in the district of Ampara, owing to limited technical staff.	In the district of Ampara, FAO teams were complemented by international staff of the INGOs Istituto Cooperazione Economica Internazionale (ICEI) and "Ricerca e Cooperazione"
1.1 Repair of 418 damaged craft Specifically: - Signature of contract with Ceynor. - Implementation of the repair works.	The contract with Ceynor was signed and a total of 838 crafts were repaired, representing an increase of 420 crafts with respect to the initial target.	The number of vessels repaired though this activity was higher than initially estimated Some of the administrative aspects of the repairs undertaken by Ceynor had to be verified.	All vessels repairs implemented through Ceynor had been subjected to an internal FAO audit; final payments have been released accordingly.
1.2 Repair of 81 inboard engines and 228 outboard engines Specifically: -Signature of contracts with Suzuki, Brown Motors and Ceynor. - Implementation of the repairs.	The contracts with Suzuki, Brown motors and Ceynor companies were signed and the relevant activities completed. A total of 119 inboard and 19 outboard engines have been repaired.	Problems were encountered with the delivery capacity of Suzuki, Brown motors and Ceynor. Consequently, the total number of engines repaired (138) is lower than what initially planned (309).	Part of the funds destined to these contracts have been redirected toward the repair of inboard and outboard engines through Ceynor.

1.3 Distribution of 744 packages of fishing gear and accessories Specifically: Procurement and distribution of fishing nets and accessories to final beneficiaries.	The project procured a total of : - 6 100 units of nets 2 ply 13 / 16"; - 2 000 units of nets 6 ply 31/2" - 6 000 bundles of PE rope 4mm; - 6 000 bundles of PE rope 5 mm; -30 000 units of hooks 72 000 units of swivels B/L type; -30 000 units of swivels; -15 650 units of floats; 100 000 units of foam floats; 72 000 units of crimps for main line; 60 000 crimps for branch line; 30 000 snap on connectors for hooks; 72 000 nylon skeines for main line; and 60 000 nylon skeines for main line. These items allowed for the assembling of 415 packages of 2 ply 13/16" nets, 240 packages of 6 ply 31/2 " nets and 60 packages of tuna long line kits amounting to 715 packages. The items were all distributed in the district of Hambantota through four distribution exercises that took place in the months of December 2005 and December 2006	A number of locally procured fishing net kits (tuna long line nets) suffered significant price increases.	To compensate for the increase in prices of the tuna long line kits, the total number of nets procured was reduced from 744 units to 715 units.

1.4 Upgrade of boatyards facilities for the construction of FRP, one-day and multi-day boats in addition to capacity building of relevant departments of the MFAR. These included: -Preparation of legislation. -Approval from FAO and National -Technical Committees. - Review by national legal adviser. - Review by legal department - Ministry of Justice. - Translation into Sinhala and Tamil. - Official submission to the Minister of Fisheries and parliamentary approval. - Hiring of staff by the MFAR. Procurement of inputs: - Procurement of office equipment. - Procurement of vehicles. - Procurement of measuring instruments and tools. Training: - Preparation of training materials. - Implementation of training for MFAR staff. Upgrade of boatyard facilities: - Inventory checks, procurement and distribution of equipment for the upgrade of boatyard facilities.	The activities of this component were successfully accomplished: Regulations covering the construction of vessels up to 24 metres have been elaborated and submitted to the Ministry of Fisheries for parliamentary approval. Relevant staff of the Ministry of Fisheries were trained and provided with the necessary logistical and technical equipment. - As a result, 11 boatyards have been provided with materials for the upgrade of basic safety- and construction- standards.	The activities under this sub-component represented a significant contribution toward the improvement of boat building standards in Sri Lanka. However, the MFAR Certification Unit for vessel construction requires additional follow-up and technical support in the medium-term.	Under the guidance of FAO's Fishing Technology Service (FIIT), donors and technical agencies have been updated on the MFARs progress toward the establishment of a technical unit for the certification of vessel construction.

1.5 Training on safety at sea Specifically: - Signature of the contract with the National Institute for Fisheries and Nautical Engineering (NIFNE). - Preparation of a training manual for beneficiaries. - Translation of the training manual into Sinhala and Tamil. - Printing of the manual. - Beneficiary training components. - Preparation of educational boards. - Preparation of a video on boat stability. - Preparation of a video on safety at sea.	300 fishers of one-day and multi day boats received a two day training exercise on the principles of vessel stability and safety at sea. 1 800 fishers were provided with a video and printed training materials on boat stability and safety at sea.	The activities under this sub-component represented a significant contribution toward the improvement of loading practices and safety at sea measures for several hundred fishers in Sri Lanka.	
1.6 Installation of 11 inboard engines for multi day and one day boats. a) Procurement of engines. b) Distribution and installation of engines.	13 inboard engines. In terms of the funds allocated for this activity it was possible to purchase two more units than initially planned. The 13 inboard engines were delivered to the Ministry of Fisheries and installed on newly constructed multi-day boats.	The procurement and distribution of new engines has contributed toward the MFARs efforts to replace vessels destroyed by the tsunami.	
2.1 Construction of landing facilities and infrastructure for post-harvest and commercialization, including 10 fisher community centres and 10 auction points. Specifically: Preparation of technical specifications, authorizations, tendering and construction of the following infrastructure: - Fisheries facility complex at Abadawatte Kalutara. - Fisheries complex at Modarawatte, Balapitiya. - Grain storage house at Kalamatyia,	Three commercial contracts were signed with three construction companies for the construction of two fishery facility complexes. These included, one grain storage house, one auction shed, two ice storage facilities, one fisheries community centre and one fish processing centre.	The type and the number of the buildings initially proposed were inconsistent with the needs identified through livelihood studies (refer to “Preparatory activities”). The designs, bill of quantities (BoQs) and technical specifications provided by the INGOs for the infrastructure were partially incorrect and needed thorough revision.	It was decide to allow INGOs to propose buildings differing from those included in the Operational Plan for the first year. FAO hired professional construction engineers for the revision of designs, BoQ and technical specifications in addition to monitoring the progress of the construction works.

Tangalle. - Auction shed at Panama, Potuvil, Amapara. - Two ice storage facilities at Periya Ulle, Kudakalle, and Ampara. - Community centre at Thiruchendur, Batticaloa - Fish processing centre at Vinayagapuram, Ampara	The contracts were successfully completed and the corresponding infrastructure handed over to the final beneficiaries.		
2.2 Creation of employment opportunities through four pilot projects in the fields of aquaculture and other income-generating activities. Specifically: LoAs and contractual arrangements were signed with NGOs and INGOs. These included: INGOs: UCODEP, ISCOS, GUS, Ricerca & Cooperazione, Asia and Alisei. NGOs: Business Development Centre Network (BDC), District Vocational Training Centre Ampara, Janashatki Development Centre Monorgala, Sewa Lanka Government agencies: Department of Animal Prodution and Health. Commercial companies: Company "Marco Ballerini", for the implementation of activities including: - Installation and rehabilitation of homestead gardens. - Rearing of goat, cattle and poultry.	Three pilot projects for aquaculture development were successfully implemented. Activities for livelihood diversification were successfully implemented.	The livelihood studies and the subsequent LoAs allowed for the inclusion of a diversified set of activities for livelihoods rehabilitation. The vast majority of livelihood activities implemented by the project had a positive impact on beneficiary families, allowing for an increase in income. One of the four projects of aquaculture development (fish-cage culture) had to be cancelled owing to technical constraints. The procurement and distribution of inputs to implementing partners revealed to be a complex task.	The beneficiaries of the aquaculture development project that was discontinued were assisted through activities for fish commercialization. The procurement of inputs had to be prioritized and was supported through the hiring of dedicated national and international staff.

- Installation of community plant nurseries. - Installation of mushroom production units. - Rehabilitation of paddy fields. - Construction of units for water harvesting. - Construction of grain-storage warehouses. - Rehabilitation of seasonal tanks. - Rehabilitation of irrigation canals and earth bunds. -Production of training materials. - Support to fish marketing (push bikes, tools, training, etc) - Vocational training for the production of handcrafts. - Vocational training for eco-tourism activities (eco-guides). - Construction of view towers and paths for eco-tourism. - Training on self-employment. - Vocational training on handloom production. carpentry, engine repairs and plumbing. - Construction of handloom production units. - Training on nutrition and food preparation. - Mangrove reforestation. - Coconut reforestation. - Plantation of fruit trees. - Procurement and distribution of relevant inputs to NGOs and INGOs.			
2.3 Training Implementation of trainings on: - Entrepreneurial development. - Self-employment. - Alternative income-generating activities. - Nutrition and food preparation. The training exercise was made possible through the collaboration of the local NGO-	Training activities on entrepreneurial development, self-employment and alternative income-generation were successfully implemented by the partner NGO. Training activities on nutrition and food preparation were successfully implemented by the national FAO Nutritionist.	- The project's training component benefited from complementarities with activities of the implementing partners	

North East Socio-Economic Developers (NESED) and through field trainings implemented by the FAO National Nutritionist. .			
2.4 Construction of new freshwater hatchery station in the district of Hambantota. This activity included: - Implementation of a feasibility study and preparation of drawings and BoQ - Tendering. - Implementation of construction works. - Training of National Aquaculture Development Authority (NAQDA) staff. - Contracting the services of Santiir Aquatic ltd for the provision of engineering and technical assistance. - Procurement of complementary expendable and non-expendable equipment.	The hatchery infrastructure, including the necessary supporting electric and hydraulic systems and laboratory equipment were completed and handed over to the local counterpart, NAQDA.	The construction of the hatchery will have a significant impact on the diversification of livelihoods of farmers and fishers in both the south and east of the country	
3.1 The application of Geographic Information System (GIS) based methodology and development of a pilot DSS system for aquaculture development. The activities included: Implementation of activities with the University of Florence -Implementation of activities with the State Remote Sensing Application Centre (APSRAC) - Implementation of GIS-based activities.	The LoAs with APSRAC and the University of Florence were signed and successfully completed. The planned DSS was completed and used to plan aquaculture development activities.	The finalized DSS was valuable in facilitating the selection of sustainable activities for aquaculture development.	

Additional activities carried out	**Status of activity implementation**	**Achievements**	
1.1 Implementation of two workshops on sustainable livelihoods and post-tsunami recovery in Sri Lanka.	The two workshops were successfully implemented.	The workshop provided the participants with an effective tool for the planning and design of project activities in the context of emergency and rehabilitation operations.	
1.2 Field coordination for the fisheries sector	The field staff, operating expenses and equipment provided by the project for the FAO offices in Colombo, Ampara and Batticaloa greatly supported FAO's coordination role in the fisheries sector.	The coordination for the fisheries sector, conducted at both central and district level, allowed for greater stakeholder synergies paving the way for the rehabilitation of the fisheries sector in Sri Lanka.	
1.3 Construction of community fishing gear storage facilities on a pilot basis and corresponding training.	Under the guidance of an international consultant funded by other FAO interventions, the project provided materials and logistical support for the construction of three pilot community fishing gear storage facilities.	The improved model of a fishing gear storage facility was passed to successive, longer-term FAO development projects for replication.	

3 PROJECT IMPLEMENTATION

3.1 Preparatory activities: Implementation of livelihoods analyses in 14 villages

In June 2005, an inception workshop was held in Colombo convening key stakeholders to define the structure of its livelihood component. Representatives from the Asia Pacific Network of Aquaculture Centres (NACA) STREAM, the UK Department for International Development (DFID), Voluntary Service Overseas (VSO) and the Australian Government's Overseas Aid Programme (AusAID) attended the workshop and provided useful input.

During the two day workshop, stakeholders discussed the livelihood component and agreed on the following:

- To develop the component in a few pre-selected villages rather than over vast areas. As such, the project would select priority villages based on criteria such as the number of tsunami-affected families and the extent of infrastructural damages.
- To promote a multi-sectoral approach for livelihood rehabilitation in selected villages.
- To implement activities through NGOs and INGOs under FAO's technical and administrative supervision.
- To define livelihood activities through specific studies to be implemented in selected villages in collaboration with INGO staff.
- To implement livelihoods studies through local NGO staff under the guidance of the Stream Initiative (The Regional Initiative founded by NACA, DFID, FAO, VSO and AUSAID aims to offer support to the livelihoods of affected populations who manage aquatic resources).

A total of 14 selected villages were subsequently identified by FAO. These were based on criteria that included infrastructural damage, extent of displacements, number of affected families, etc. Similarly, FAO selected its implementing partners through competitive tenders, the results of which included the participation of INGOs CIPSI, GUS, ISCOS, UCODEP, Ricerca e Cooperazione, ICEI, Alisei and Asia.

Specifically, the beneficiary villages were selected according to the following criteria :

- In collaboration with the Ministry of Fisheries, FAO prepared a list of a total of 18 priority villages characterized by:

    1. At least 40 percent of houses destroyed or severely affected by the tsunami.
    2. Minimum of 500 individuals living in the village.
    3. Minimum of 50 active fishers residing in the village.
    4. Presence of at least 40 fishing vessels.

- The list of the pre-selected villages was then submitted to Italian NGOs during a presentation that was held at the Italian Embassy on 8 August 2007. All 24 Italian NGOs registered with the Italian Embassy were invited.

- The expressions of interest were screened on the basis of the INGO's previous experience in the implementation of similar projects, their track record with the donor and FAO, and the extent of their knowledge concerning the areas of implementation.

- The potential implementing partners and beneficiary villages were selected by a panel composed of a representative from FAO and a representative from the Cooperazione Italiana.

- Through the selection process and in accordance with the expressions of interest a total of 14 villages and eight INGOs were finally selected. Of these 14 villages, 8 where included in the list pre-selected by FAO, while 6 were newly selected.

The villages selected for the studies and correspondent INGOs are outlined in the table below:

	NGO	Location
Hambantota	**CIPSI**	Mawella
		Rekawa
	GUS	Yodakandiya
	ISCOS	Kahandamodara
	UCODEP	Kalametiya
Ampara	**Ricerca e Cooperazione**	SinnaUllai
		Panama
	ICEI	Vinayapuram
		Periaulli Kudakalli
	Alisei	Pandirippu
Batticaloa	**Asia**	Marnkerni
		Navalady / Thiruchendur
		New Kathankudy East
	Alisei	Amirthakali
Kalutara	**UCODEP**	Weragama[5]
	Asia	

Through the signing and implementation of letters of agreement (LoA) with STREAM and with the local NGO IPID (Institute for Participatory Interaction in Development), a total of 14 livelihood studies were finalized between the months of September and December 2005. All INGOs participated in the implementation of the livelihood studies, with the exception of the INGO CIPSI, that was excluded from the selection process.

The last of the 14 livelihood studies was completed in the month of December 2005. All livelihood studies were subsequently handed over to the INGOs for the drafting of detailed project proposals. For further details over the type of activities implemented by the INGOs, please refer to activity 2.2 "Creation of alternate employment through 4 pilot projects in the fields of aquaculture and other income-generating activities".

Upon specific request from the donor, one additional livelihood study was implemented in the village of Weragama in the district of Kalutara during the months of May and June 2006. The study covered additional livelihood activities for UCODEP and INGOs, thus increasing the number of surveyed villages to 15.

[5] The livelihood study in the village of Weragama was implemented in the months of May and June 2006 in addition to the 14 studies implemented between September and December 2005 in previous 14 villages.

3.2 Repair of 838 damaged craft (Activity 1.1)

Repairs to damaged craft were carried out by CEYNOR corporation engineers who assumed responsibility for the supply of repair material as well as labour costs. Selected beneficiaries included fishers whose boats suffered damages at the hands of the tsunami, and as such were included in the lists of the MFAR. Through the project, 838 craft were repaired, representing an increase of 420 with respect to the initial target.

Monitoring of Ceynor activities was carried out by three FAO marine engineers operating in the project districts. The marine engineers ensured the necessary quality control and assisted with various corrective measures. Following the observations of FAO staff, an internal audit was launched to verify the relevant administrative documentation of Ceynor. Repairs were recorded through a job card issued for each individual boat and engine, the details of which were subsequently inserted into an electronic database. For the list of beneficiaries of boat repairs and other details as per the database, kindly refer to the "First Year Interim Report" and relevant annexes. All repairs had been completed within the first year of project activities.

3.3 Repair of 119 inboard engines and 19 outboard engines (Activity 1.2)

The provision of spare parts and the repair of inboard and outboard engines was implemented through contractual agreements with Brown Motor Co. and Suzuki Motor Co. In addition, Ceynor provided the manpower for the implementation of the repairs.

Repairs funded under the contract with Suzuki for outboard engines were completed in July 2005. By contrast, repairs funded under the contract with Brown motors Co for inboard engines where completed in March 2006. An electronic database of the job cards corresponding to all repaired engines was accordingly prepared and the beneficiary lists annexed to the "First Year Interim Report".

3.4 Distribution of 715 packages of fishing gear and accessories (Activity 1.3)

The procurement of fishing gear and accessories was part of a wider FAO programme implemented through international tenders amounting to over US$3 000 000. For the list of project beneficiaries please refer to the "First Year Interim report". The relevant technical specifications were documented in the Operational Plan for the first year. In addition, the distribution of the fishing packages was executed through the Ministry if Fisheries and Aquatic resources (MFAR).

3.5 Upgrade of 11 boatyard facilities for the construction of Fibre Glass Reinforced Plastic (FRP), one-day and multi-day boats and capacity building of the relevant departments of the MFAR. (Activity 1.4)

This activity was developed during the second year of the project and entailed several sub-components, including:

- Elaboration of a new set of regulations for 24 metre vessels.
- Establishment of a Certification Unit for the construction of new fishing vessels.
- Upgrade of boatyard facilities and enhancement of the working conditions.

The elaboration of the new set of regulations entailed several steps, each of which ensured the necessary local ownership.

Preparation of the text of the legislation / regulations: this was achieved thanks to national legal experts, specialized international consultants, and technical staff from the competent FAO technical divisions. The fine tuning of the legislation required nine months of preparatory work, (December 2006 to August 2007) involving key stakeholders, including the MFAR and the Sri Lankan Ministry of Justice. Furthermore, an instruction manual containing technical drawings and scantlings was produced.

Approval from FAO's technical divisions: the translation of the regulations into the local language could only be initiated upon receipt of the final clearance from FAO's technical divisions in Rome. The final clearance was received in August 2007.

Review by the national legal adviser: the project used external consultants from the Ministry of Justice who adapted the regulations to the Sri Lankan context. These external consultants collaborated with FAO's national and international experts.

Translation into local languages, Sinhala and Tamil: this step included a translation for the preparation of appropriate technical terminology. Further, a second translation focused on the adaptation of the technical translation in line with accepted legal terminology.

Official submission to the Minister of Fisheries: the official handover of the instruction manual and corresponding regulations was executed through the project closure ceremony in Colombo on 21 September 2007. Participants included the MFAR, the Italian Ambassador to Sri Lanka and representatives from FAO technical divisions.

The finalized regulations are presented in Annex 3 "Fishing Boats Safety (Design, Construction and Equipment) Regulations, 2007". However, the instruction manual has not been attached owing to its considerable length (over 160 pages); it can however, be provided upon request.

The establishment of a Certification Unit for the construction of all new fishing vessels was reached through:

Establishment of office premises and procurement of office equipment: the space for the establishment of a Certification Unit was located in the premises of the MFAR, adjacent to the department in charge for the registration of all new fishing vessels. The existing office space was entirely refurbished, including new floors, roof, and room separations. The necessary office equipment including desktops, furniture and multi-media equipment was purchased and subsequently handed over to the MFAR.

Procurement of vehicles: to provide the staff of the Certification Unit with the necessary mobility, the project provided the MFAR with two station wagons, a Toyota Corolla and one Nissan Patrol.

Procurement of measuring instruments and tools: the project provided the Certification Unit with the technical equipment for the implementation of quality controls on newly constructed hulls. Such instruments included hygrometers, barcol meters and hull thickness measuring

devices. The list of equipment and materials are available in Annex 4 under "equipment and materials for the MFAR Certification Unit".

Approval of the cadres structure by the MFAR: the operation of the Unit is managed by a Marine Engineer who is assisted by district-based marine engineer assistants. The technical inspections on the newly constructed vessels are implemented by the marine engineer assistants, who accordingly provide their recommendations to the Marine Engineer. The staff of the unit became operational immediately after project closure. The follow-up to this activity through the funding of other complementary interventions will ensure greater sustainability. Under the guidance of FAO's Fishing Technology Service (FIIT), donors and technical agencies received regular feedback on the MFARs progress toward establishing a new Unit..

Preparation of training materials and the delivery of training components for MFAR staff: an eight week training component was implemented from May to July 2007. The training involved a total of 17 staff from the MFAR, including marine engineers and recently graduated students from the National Institute of Nautical Sciences. The training was implemented under the guidance of FAO's International Consultant / Naval Architect and benefited from the collaboration of nine external trainers from relevant private and public training institutions. A manual was prepared for the course and distributed to the participants for future reference. The training provided the participants with six weeks of theoretical training and two weeks of practical training in several boatyards around the country. Specifically, the course was aimed at improving the skills of DFAR staff in order to facilitate the implementation of new regulations for the construction of 24 metre long vessels..

The subjects covered during the sessions included the following:

- History of boat building in Sri Lanka.
- Basic naval architecture and line plan drawings.
- Vessel stability.
- Installation, operation and maintenance of engines.
- The importance and role of the Surveyor.
- Regulations pertaining to the safety of fishing vessels.
- FRP in boat building.
- Radio communication.
- Safety at boat yards.
- Safety at sea.
- Registration and certification of boats and boat yards.
- Practical training in sea trials, inclining test and fire fighting.
- Computer training.

The course was implemented thanks to the support of 14 FAO national consultants and external trainers. Accordingly, a list of participants and training topics are presented in Annex 5 under "training for the MFAR staff".

In terms of the logistical requirements for the training exercise (including accommodation facilities, transportation, monitoring and evaluation) FAO was assisted by the Italian NGO ISCOS.

The upgrade of boatyard facilities was accomplished through:

Selection of beneficiary boatyards: in collaboration with MFAR, project staff selected 11 boatyard facilities to benefit from enhanced working and safety conditions. The project selected MFAR registered small to medium sized boatyards who were committed to improving their production standards. The selection process was performed through field visits to 15 boatyards.

Procurement and distribution of equipment for the upgrade of boatyard facilities: the equipment provided includes safety equipment for personal protection and the prevention of environmental hazards. During the procurement of the equipment, FAO ensured the quality of products to be distributed, each of which had to comply with the relevant national and international standards. Detailed lists of the equipment for distribution are presented in Annex 6.

The equipment provided by the project was complemented by an FAO booklet entitled "Guidelines on Improved Boat Building Practices in Sri Lanka", which was produced in Sinhala, Tamil and English. This was made possible through multi-donor funding including the Cooperazione Italiana. The booklet illustrates boat building practices for small and medium boat builders.

3.6 Training on safety at sea (Activity 1.5)

The implementation of safety at sea training components are vital to the sustainability of Sri Lankan fishing operations. The vast majority of Sri Lankan fishers lack sea worthiness certificates. Thus, interventions aimed to train the maximum number of fishers within the project timeframe together with ensuring the distribution of training materials throughout beneficiary communities. These materials were subsequently distributed to relevant national and international institutions for further reference and reproduction / replication. The safety at sea training components made extensive use of FAO technical expertise both at HQ and national levels, thanks to increased coordination. The activity was accomplished through the following steps:

Signature of letter of agreement with NIFNE: included the implementation of two-day training exercise benefiting 300 fishers on basic safety at sea. Experienced trainers were selected among NIFNE resource persons and external trainers with specific skills in the relevant subjects: safety at sea, first aid, fire fighting and personal safety of fishers. The schedule and contents of the training courses are presented in Annex 9.

Preparation of training manual for beneficiaries: a manual on "safety of fishers" has been developed in adherence to international safety standards and regulations, in line with the nature of Sri Lankan vessels and local customs. The manual covers topics such as safety at sea, stability of vessels and first aid; the contents of which have been technically cleared by the competent technical division and the relevant national authorities prior to publication. Its user-friendly format accompanied by visual explanations in the form of cartoons is vital to enhancing beneficiary awareness. The manual is not attached to this report due to its size, but can be provided upon request.

Translation of the training manual into Sinhala and Tamil including printing and distribution: the manual has been translated into the relevant local languages by technical translators.

Accordingly, the manual was printed based on the distribution list drafted by FAO and the DFAR. The list included the DFAR, the Sri Lanka Ports Authority, the Ceylon Fisheries Harbours Corporation, the National Institute of Fisheries and Nautical Engineering, public and private training institutions, UN Agencies and I/NGOs involved in the development of the fisheries sector in Sri Lanka.

Preparation of educational panels for harbours: two educational panels (3m x 2m) were produced and mounted in 18 harbours so as to promote safety at sea and the stability of vessels. The informative panels were produced in Sinhala, Tamil and English. The purpose of this activity was to encourage best practices, thereby reducing the number of accidents at sea.

Preparation of two videos on boat stability and safety at sea: a local company was contracted to undertake this activity. Consequently, the videos were filmed in Sri Lanka with the participation of local fishers and boat owners. The content of the videos reflected the working conditions of Sri Lankan fishers, while focusing on general safety at sea and vessel stability. The videos have been cleared by FAO's relevant technical divisions and are available on DVD.

3.7 Installation of 13 inboard engines for multi day and one day boats (Activity 1.6)

The project ensured the procurement and distribution of 13 *inboard* engines: In particular, the project purchased nine Ashok Leyland 42 / 52 hp engines and 4 John Deere 62 / 72 hp engines. The engines were subsequently distributed to local authorities for delivery to boatyards involved in the reconstruction programmes. Nine engines have been installed within the project timeframe, while 4 remaining engines are scheduled for distribution to beneficiaries after project closure.

3.8 Construction of landing facilities and infrastructure for post-harvest and commercialization. (Activity 2.1)

This sub-component has been designed to support the livelihood activities of the project. The list of the infrastructure to be rehabilitated and / or constructed was therefore linked to the results of the initial livelihood studies. Given the type of activities, the typology and location of the infrastructure had to be verified by the INGOs upon the commencement of their contractual arrangements with FAO. As such, delays emerged in the tendering process. Nevertheless, the construction work was completed prior to project closure. The rehabilitation of fisheries-based infrastructure contributed significantly towards the restoration of sustainable livelihoods.

The inclusion of infrastructure rehabilitation activities as part of the livelihood component required adjustments in terms of the volume and typology of units under construction. Initially, this activity was extended to a limited number of community centres and auction points, after which interventions were expanded to include fisheries complexes, grain storage houses, fish processing centres and ice storage facilities.

The role of FAO and the INGOs in the construction process was defined as follows:

- INGOs assumed responsibility for determining the type of infrastructure, for reaching the necessary consensus and authorization from the local community and local authorities. In addition, INGOs assisted FAO in the overall supervision of activities so

as to provide suggestions for the final handover. In some cases, INGOs supplied the technical drawings of the buildings under construction.

- FAO focused on the provision and revision of technical drawings; the revision the verification of the administrative documentation (such as site availability, local authorities clearances, etc); the tendering of the construction process; follow-up activities on the construction works; and delivery of the buildings to the final beneficiaries.

For the follow-up of all construction activities, FAO hired a full-time engineer who managed the construction schedule while adhering to the quality standards stipulated under the contractual agreements.

Overall, the project funded and completed the rehabilitation of fisheries-based infrastructure in the following villages:

- fisheries facility complex at Abadawatte and Kalutara;
- grain storage house at Kalamatyia and Tangalle;
- auction shed at Panama, Potuvil and Amapara;
- two ice storage facilities at Periya Ulle, Kudakalle and Ampara;
- community centres at Thiruchendur and Batticaloa; and
- fish processing centres at Vinayagapuram and Ampara.

Technical drawings and all other necessary contractual documentation are available in the office of the FAO Representation for Sri Lanka and the Maldives in Colombo. Funds from the initial plans for infrastructure works were partially diverted towards the construction of the freshwater prawn hatchery station as per activity 2.4.

3.9 Creation of alternate employment schemes through three pilot projects in aquaculture and other income-generating activities (Activity 2.2)

As specified in the paragraph dedicated to preparatory activities, the project conducted detailed studies for the development of livelihood components. The majority of these activities were implemented through international and national NGOs, community based organizations (CBOs) and private contractors.

The list of organizations and contractors involved in the implementation of project activities are presented in Annex 11.

FAO collaborated with seven Italian NGOs in support of livelihood restoration in 15 tsunami-affected villages. These included:

- GUS;
- ISCOS;
- UCODEP;
- Ricerca e Cooperazione;
- ICEI;
- Alisei; and
- Asia.

Collaboration with the INGO CIPSI was discontinued owing to its inability to adhere to FAO's technical standards and present a project proposal in line with the real outcomes of the Participatory Rural Appraisal (PRA).

As a result of the exclusion of the INGO CIPSI, interventions were expanded to the villages of Beruela and Welligama within the district of Kalutara. The adjustment was designed to compensate for the villages assigned to CIPSI. In order to facilitate the implementation of activities in the newly selected villages of Weeligaama and Beruela, FAO signed a second LoA with several INGOs including ISCOS (for the village of Beruela, district of Kalutara), Asia and UCODEP (both operating in the village of Weeligama within the district of Kalutara).

Each of the seven INGOs carried out the following activities: the reconstruction of water tanks; installation of homestead gardens; installation and operation of water harvesting units; distribution of livestock; training for agriculture, livestock, fisheries and alternative livelihood development; distribution of tool kits, construction of small-scale infrastructure; dry fish processing, pilot schemes for aquaculture development; installation and operation of community plant nurseries; promotion of eco-tourism; and support for reforestation. The list of INGOs and areas of implementation of project activities are reported in the table below:

Selected Italian NGOs and location for the implementation of project activities

	NGO	Location	Main ethnic group in the selected villages
Hambantota	**GUS**	Yodakandiya	Sinhala
	ISCOS	Kahandamodara	Sinhala
	UCODEP	Kalametiya	Sinhala
Ampara	**Ricerca e Cooperazione (RC)**	SinnaUllai	Muslim
		Panama	Sinhala and Tamil
	ICEI	Vinayapuram	Tamil
		Periaulli Kudakalli	Muslim
	Alisei	Pandirippu	Tamil
Batticaloa	**Asia**	Marnkerni	Tamil
		Navalady / Thiruchendur	Tamil
		New Kathankudy East	Muslim
	Alisei	Amirthakali	Tamil
Kalutara	**Asia**	Weragama	Sinhala
	ISCOS	Beruela	Sinhala
	UCODEP	Weragama	Sinhala

The activities implemented by the INGOs included:

- installation and rehabilitation of homestead gardens;
- rearing of goat, cattle and poultry;
- installation of community plant nurseries;
- installation of mushroom production units;
- rehabilitation of paddy fields;
- construction of units for water harvesting;
- construction of grain-storage warehouses;
- rehabilitation of seasonal tanks;
- rehabilitation of irrigation canals and earth bunds;
- production of training materials;

- support to fish marketing (push bikes, tools, training, etc);
- vocational training for the production of handcrafts;
- vocational training for eco-tourism activities (eco-guides);
- construction of view towers and paths for eco-tourism;
- training on self-employment;
- vocational training on handloom production, carpentry, engine repairs and plumbing;
- construction of handloom production units;
- training on nutrition and food preparation;
- mangrove reforestation;
- coconut reforestation; and
- plantation of fruit trees.

3.9.1 Construction and installation of rain water harvesting units

The construction and installation of rain water harvesting units was particularly important in securing increased beneficiary access to water sources throughout project areas. Accordingly, three different LoAs were signed paving the way for the construction of rain water harvesting units and the provision of appropriate beneficiary training.

Through the LoA with the Lanka Rain Water Harvesting Forum, a total of 22 above ground $8m^3$ ferro-cement rainwater systems have been installed in 22 households in Pandiruppu village in Ampara district. All beneficiary householders have been trained on rain water harvesting technology, as well as operation and maintenance of rain water harvesting systems.

In the villages of Sinna Ullai and Panama in Ampara district, 40 rain water harvesting tanks have been installed and beneficiaries received the relevant training through the Janashakthi Development Centre in Monaragala.

Another LoA was signed with the local NGO PPDRO (Porativupattu Pradesha Development Rehabilitation Organization) for the construction of 22 above ground $5m^3$ rain water harvesting units for households in Amirthakali village in Batticaloa district. Training on operation and maintenance of rain water harvesting systems was also provided to beneficiaries.

3.9.2 Implementation of vocational trainings

A total of 40 beneficiaries residing in the villages of Periya Ullai, Kudakalli in Pottuvil Division and Ampara district benefited from training in carpentry and improved electrical skills. The LoA signed with the District Vocational Training Centre in Ampara entailed the provision of training materials and equipment as well as practical training. Considerable effort was expended to strengthen technical skills enabling beneficiaries to work independently.

Through the LoA with the local NGO Sewalanka, 10 women received training paving the way for the establishment of appropriate structures for fish processing activities. Specifically, training components covered social mobilization for the creation of a cooperative, training in business development, finance, staffing, marketing and administration.

3.10 Training (Activity 2.3)

Following the identification of an appropriate NGO such as NESED, the project ensured the delivery of training exercises in entrepreneurial development and alternative income-generation. Selected beneficiaries were trained according to their needs and different levels of expertise. Particular attention was devoted to: vulnerable groups; bolstering local capacities; and stimulating the interests of trainees. In addition, a market research study was conducted to support the commercialization of products. An outline of the training courses is presented in Annex 7.

Training courses on nutrition and food preparation have been developed and implemented by FAO thanks to the support of a local nutritionist. A field programme was undertaken to:

- create nutrition awareness among beneficiaries;
- encourage the use of home grown products;
- promote the diversification of foods;
- disseminate recipes with high nutritional content and encourage food processing; and
- carry out community-based assessments on nutritional patterns with a focus on maternal, lactation and child nutrition.

This training exercise was particularly beneficial throughout tsunami/conflict-affected areas suffering from food insecurity. Nutrition training materials in the form of posters, leaflets and booklets have been produced and disseminated during training courses. Positive feedback was received not only from beneficiaries, but also from other UN Agencies. A list of the nutrition training materials is presented in Annex 8.

3.11 Construction of new freshwater hatchery station in the district of Hambantota (Activity 2.4)

Following the results of the GIS component (result 3.1) the project adjusted its aquaculture component in support of freshwater development activities. In consultation with stakeholders, project efforts focused on aquaculture activities in the southern district, where the development of freshwater prawns *(Macrobrachium Rosenbergii*) was seen as a priority. As a result, a quality freshwater prawn hatchery station was constructed and subsequently handed over to NAQDA. The hatchery will enable the production of quality seed for the southern districts of Sri Lanka as well as for the eastern districts of Ampara and Batticaloa.

The construction of the hatchery required the following activities:

- implementation of a feasibility study and the preparation of appropriate BoQ drawings;
- tendering and implementation of construction works;
- training of NAQDA staff;
- contracting the services of Santiir Aquatic ltd for the provision of engineering and technical assistance; and
- procurement of complementary expendable and non-expendable equipment.

Feasibility study: following initial recommendations from Government authorities, FAO fielded a specialized consultant to assess the situation. The mission revealed the availability of sufficient water resources to feed culture ponds in the surveyed districts. Similarly, the

mission indicated enough land for the construction of ponds for shrimp culture. Aquaculture is a widely practiced activity in these districts and contributes to the food security of beneficiary communities.

Traditionally, water bodies have been stocked with fingerlings for periodic harvesting by the local fishers. The NAQDA is responsible for promoting aquaculture activities at field level. In addition, the NAQDA is operating a fresh water prawn hatchery at Chilaw in the north to supply *Macrobrachium Rosenbergii* fingerlings. The hatchery provides prawns to interested farmers for polyculture in their ponds. The brood stock for the hatchery operation is available throughout the year and is collected from the Jaela river near Negambo.

To facilitate the construction of a freshwater hatchery, a survey was conducted to evaluate the physical, technical, and economic feasibility of *Macrobrachium Rosenbergii* farming in the southern provinces of Sri Lanka.

As part of the mission, the consultant reviewed information provided by the NAQDA and the MFAR. The field visits identified the district of Hambantota as an ideal location for the shrimp hatchery. Following the outcome of the mission, FAO charged the consultant with the task of designing the hatchery station and defining the BoQ. Final drawings were delivered to FAO in February 2007.

Tendering: this step was concluded in May 2007, after which the agreements with the selected construction company were signed.

Implementation of construction works: construction works started in June 2007 and were completed in December 2007.

Training of NAQDA staff: through the stipulation of consultancy and commercial contracts (with the Indian-based company Santir Aquatic Limited), FAO trained the staff of NAQDA on:

- the identification of potential sources of quality broodstock in the southern region;
- the identification of suitable locations for the sourcing of quality broodstock;
- the identification of appropriate transportation modalities for broodstock;
- the preparation of broodstock ponds to be located at the NAQDA Agunaweva extension office in Hambantota district;
- the collection and maintenance of broodstock; and
- the supervision of broodstock development.

FAO provided the necessary expertise for the establishment of the microbiology laboratory located within the premises of the freshwater hatchery station. The purpose of the laboratory was to conduct analyses of water quality and detect eventual diseases in both broodstock and shrimp seed. Specifically, FAO bolstered local capacities through:

- Supporting NAQDA staff to install laboratory equipment.
- Training of NAQDA technical staff to detect the emergence of disease in broodstock and seed during the production cycle.

3.12 Application of GIS based methodology: the design of a pilot DSS for aquaculture development (Activity 3.2)

The activity was implemented through LoAs with the University of Florence (Italy), the University of Peradenya (Sri Lanka) and the Andra Paradesh State Remote Application Centre (APSRAC) in India.

The APSRAC enabled the elaboration of two pilot GIS models for:

- the selection of appropriate areas for the implementation of aquaculture activities in the districts of Hambantota, Ampara and Batticaloa; and

- the establishment of an Integrated Natural Resource Information System (INRIS) for the districts of Hambantota, Ampara and Batticaloa.

The Department of Agronomy and Land Management of the University of Florence complemented APSPRAC's activities in support of the elaboration of two pilot GIS models including:

- GIS data customization, and
- design of a DSS for aquaculture management and INRIS development. .

The activities of the University of Florence and APSRAC were supported by the University of Peradentyia. Effective partnerships enabled the establishment of a DSS paving the way for the identification of aquaculture sites in coastal areas.

4 ACTIVITIES IN SUPPORT OF THE PROJECT'S EXPECTED RESULTS

Expected results	Activities during the reporting period	External factors impacting project implementation
1. A total of **3 128** fishers who lost their production assets as a result of the tsunami resumed fishing operations.	A total of **4 263** fishers resumed fishing activities within the first 12 months of project implementation. The breakdown is as follows: **465** fishers benefited from the repair of 93 multi-day boats. **660** fishers benefited form the repair of 330 FRP boats. **800** fishers benefited from the repair of 400 ORU crafts. **30** fishers benefited from the repair of 15 Wallam crafts. **595** fishers benefited from the repair of 119 inboard engines. **38** fishers benefited from the repair of 19 outboard engines. **550** fishers benefited from the distribution of 275 kits of fishing nets during the first year of project activities. **1 060** fishers benefited from the distribution of 440 kits during the second year of project activities. **65** families benefited from the installation of 13 new inboard engines. **2 100** fishers received extensive training materials on improved safety at sea practices and enhanced vessel stability measures. **120** boatyards workers benefited from the distribution of safety equipment and training materials.	The majority of organizations involved in tsunami relief operations focused on the distribution of inputs such as fishing gear and spare parts. This led the duplication of activities and subsequent delays in the selection of beneficiaries.
2. Increased income of 600 beneficiary families through improved post-harvest activities and support to livelihood alternatives.	A total of **3 205** beneficiary families benefited from the introduction of activities for aquaculture development and livelihood rehabilitation. The breakdown is as follows: **2 905** beneficiary families benefited from livelihood restoration activities including:	The process of preparing LoAs with INGOs required substantial revisions in terms of technical aspects, due to the specific profile of the activities - Some of the INGOs lacked the necessary field staff for the finalization of the LoAs - Defaults by the INGOs CIPSI and

	- installation and rehabilitation of homestead gardens; - rearing of goat, cattle and poultry; - installation of community plant nurseries - installation of mushroom production units; - rehabilitation of paddy land; - construction of units for water harvesting; - construction of grain-storage warehouses; - rehabilitation of seasonal tanks; - rehabilitation of irrigation canals and earth bunds; - production of training materials; - support to fish marketing (push bikes, tools, training, etc); -vocational training for the production of handicrafts; -vocational training for eco-tourism activities; (eco-guides) - construction of view towers and paths for eco-tourism; - training on self-employment; -vocational training on handloom production, carpentry, engine repairs, plumbing, etc. - construction of handloom production units; -training on nutrition and food preparation; -mangrove reforestation; -coconut reforestation; - planting of fruit trees; and -procurement and distribution of relevant inputs to NGOs and INGOs. An estimated **300** families benefited from the construction of community infrastructure for the fisheries sector. In addition, a considerable number of inland fishers will indirectly benefit from the establishment of the freshwater hatchery station. Since the hatchery was still on a trial basis the number of beneficiaries could not be quantified.	Alisei resulted in substantial delays in the implementation of activities in some project villages.
3 Development of a DSS for the planning and implementation of activities for aquaculture development	- The DSS was successfully developed in support of aquaculture development.	None

5 PROJECT IMPACT

Given the multi-sectoral nature and timeframe of project implementation, the assessment was conducted through a variety of components including: internal FAO evaluation missions; FAO field staff monitoring and evaluation visits; evaluation missions of the audit companies; and INGOs internal impact evaluation reports.

5.1 Impact of project activities under Result 1

Under Result 1 ("A minimum of 3 128 fisher families who lost their means of subsistence resumed fishing activities") the project enabled: the resumption of fishing operations for 4 263 families; the acquisition of skills for 2 100 fishers on the principles of safety at sea and vessels stability; and the distribution of safety equipment and training materials for 120 boatyards workers.

The impact assessment of activities undertaken under this result was implemented through an FAO "Real Time Evaluation" (RTE) mission. A total of three missions were fielded in the months of May 2005, November 2005 and July 2006. The RTE assessed FAO tsunami operations with monitoring, evaluation and feedback tools.

The three missions evaluated FAO activities in Sri Lanka as well in other tsunami-affected countries. The impact assessment covered the activities under result 1 and only partially covered those under result 2, as these were implemented after the conclusion of the RTE exercise. Activities under result 3 were not included in the evaluation, owing to the very limited budget devoted to this activity.

For additional details of the mission, kindly refer to the RTE Final Report, June 2007, which is available at both the FAO headquarters and the FAO Representation in Sri Lanka. A brief summary of its main findings is reported in the table below, which include boat repair, outboard and inboard engine repair, installation of new engines and the distribution of fishing gear.

Activity	Beneficiary Selection and quality assessment	Outcome and impact
Boat repair	Mixed. However, there was greater satisfaction among owners of modern, large boats (multi-day and one-day boats, 19 ft) than among owners of traditional crafts.	In order to ascertain the overall sustainability of activities there is a need for more time. Unfortunately not all requests for assistance could be satisfied and there were incidences of favouritism. To this end, Ceynor distributed repair materials to fishers so as to independently conduct repairs. This led to the unequal distribution of materials.
Outboard and inboard engine repair	Overall beneficiary satisfaction levels were low, due to the timing of the repairs and the need to cancel most of the planned repair activities because of problems with the suppliers.	Under project OSRO/SRL/505/ITA, activities for spare parts were reduced significantly but not cancelled.
New outboard and inboard engines	High. Although some beneficiaries would have preferred more powerful engines.	In order to ascertain the overall sustainability of activities there is a need for more time. The engine power was adequate from a technical standpoint, though some NGOs provided more powerful units.
Fishing gear	Varied. The fishing gear was of superior quality but delivered late.	Late delivery (2005-2006) reduced the impact and may have created excess capacity in some areas.

It was evident that the collaboration with government authorities and affiliated companies for the selection of beneficiaries and boat repairs should have been subjected to closer scrutiny and monitoring. The mission also underlined the importance of taking into account issues such as the over-supply of specific goods, a phenomenon that was difficult to predict thanks to the wide variety of stakeholders in tsunami relief operations in Sri Lanka. However, these considerations did not overshadow the positive impact of activities on the rehabilitation of the fisheries sector in Sri Lanka.

Activities under result 1 contributed to the recovery of the fisheries sector, though there is room for improvement in terms of implementation procedures for future operations. The main improvements to be considered can be summarized as follows:

- Selection of beneficiaries should be done in closer collaboration with local and international NGOs.
- Beneficiary lists provided by Government authorities should be crosschecked through systematic follow-up and monitoring by conducted by FAO.
- Stakeholder collaborations such as those with Ceynor should be subjected to stringent monitoring.

- FAO should share its work plans and related beneficiary lists with all relevant organizations in a timely manner, thus minimizing the chances of overlaps in activities.
- The timing of the procurement and delivery of project inputs should be optimized and reduced as much as possible as subsequent delays might finally result in the reduction of the effectiveness of project activities.

5.2 Impact of project activities under Result 2

Under Result 2 ("Increased income in a minimum of 600 beneficiary families through improved management of post-harvest activities and support to alternative livelihoods") the project assisted 3 205 families through the implementation of a vast range of activities within the fisheries, agriculture and forestry sectors.

Activities under this result have been mostly implemented through LoAs with INGOs (six in total) and NGOs/CBOs (up to twenty, depending on the stage of implementation). In total, under this component the project has implemented over 30 different types of activities.

The evaluation and impact assessments of activities were completed through a series of steps:

- Field visits by FAO staff throughout project areas.
- Periodic monitoring by the audit companies to assess INGOs activities.
- Implementation of impact analysis by the INGOs and FAO field staff.

The three RTE missions proved that activities implemented under Result 2 were sustainable and that their impact on the beneficiaries was highly positive. Further, FAO benefited from the observations contained in the interim and final reports submitted by the INGOs.

5.2.1 Overview of FAO field visits to project sites

Six field missions were undertaken between August 2006 and July 2007. These missions allowed FAO project staff to provide the INGOs with feedback together with the necessary technical advice. As a result, over 30 activities implemented under result 2 had the expected impact, though a number of these activities requited adjustments, taking into account the changing needs at field-level.

Should Cooperazione Italiana require further information regarding these six field missions, FAO will be pleased to provide this information upon request.

5.2.2 Audit reports on activities implemented by the INGOs under the project.

These were implemented in support of streamlining the activities of INGOs involved in project implementation, with the exception of the INGO Asia, for which the audit was conducted in Italy based on receipts and invoices gathered in Sri Lanka. All the audit reports are available at FAO headquarters upon request. In addition, these reports confirm that all activities executed by the INGOs have been correctly implemented, as per direct observations by the auditors.

5.2.3 Impact analysis conducted by the INGOs and FAO staff involved in project activities

	Activity	Assessed Impact
1	Rehabilitation of paddy land	All beneficiaries benefited from the activity as per initial community discussions. However, some delays were registered owing to local administrative issues. Thanks to the project, beneficiaries could restart their agricultural activities paving the way for the cultivation of land.
2	Establishment of homestead gardens (including composting)	All INGOs involved in project activities successfully implemented this activity. The reported failures occurred as a result of floods and droughts. Moreover, most disaster-affected beneficiaries recorded a high resilience capacity and resumed their activities as soon as physically possible. Activities were implemented through various methodologies, based on the agro climatic context as well as INGOs institutional capacities. In the vast majority of the cases, activities allowed for a substantial increase in food consumption as well as greater income from the sale of excess production.
3	Construction of water harvesting tanks (above ground)	Overall, this activity was successful. As per the outcome of beneficiary discussions, this activity had a significant impact on restoring livelihoods, by: - Increasing the availability and quality of water for domestic use and/or agriculture purposes. - Reducing the time women spend in water collection activities. These conditions could be verified in a number of direct observations. In some cases, the construction of tanks was completed prior to end of project closure and the subsequent impact could only be gauged against beneficiaries expectations. The diversification between underground and above-ground water tanks was an important feature of the programme, which allowed for greater effectiveness and adaptability to local conditions.
4	Vocational training for rush and reed production and eco-tourism	This activity indicated overall positive results. In most cases (INGO GUS, ICEI and UCODEP) the beneficiaries of the training have been linked to wider commercial activities, thus ensuring the commercialization of produce. In these cases, the success of the activity could be verified during project implementation. In other cases (INGO Asia), the women groups were not directly linked to a wider commercialization network. As a result, the success / sustainability of commercial activities in the medium and long-term might vary consistently based on the capacity of the individuals involved.
5	Aquaculture through re-stocking of seasonal tanks	This activity showed a great level of success in all project villages (specifically, under INGOs GUS and UCODEP). Restocking was implemented successfully thanks to the collaboration with the National Authority for Aquaculture Development, who ensured the success of activities including: - Availability of seeds for restocking. - Provision of community-based training for project beneficiaries. - Technical training on the management of seeds / fingerlings. In one case (UCODEP INGO), the beneficiaries voluntarily scaled-up project activities to a higher number of tanks than what initially

		envisaged. As a result, the project could not verify the first production due to the timing of the activities.
6	Construction of one grain-storage warehouse	The grain-storage warehouse was constructed and handed over to the relevant farmers' societies, while the collaboration with local authorities for the administration and maintenance of the structure was also formalized and verified. The activity can therefore be evaluated as sustainable.
7	Construction of three view towers for eco-tourism activities	This small infrastructure component was constructed under the INGOs UCODEP and ICEI. These were designed to complement wider efforts from local NGOs (Sewa Lanka and international INGO IUCN) and relevant national authorities (Wildlife Department). This provided the activities with a good level of sustainability.
8	Training on self-employment for women affected by the tsunami	The training was conducted by a local NGO directly contacted by FAO, in support of women's groups already active prior to project implementation. The impact of the classes could not be measured directly.
9	Rehabilitation of one seasonal tank	The tank was successfully repaired and its filling will provide the beneficiaries with increased water resources. The sustainability of this activity, which mainly consists in the implementation of regular maintenance operations was guaranteed through dedicated written agreements among the INGO and relevant local counterparts.
10	Installation of community plant nurseries	Community plant nurseries were installed by the INGOs GUS and ISCOS. The data contained in ISCOS's final report suggest the activity was a success.
11	Construction of underground water harvesting units	Tanks were constructed as per the scheduled plan to ensure an increase in the amount of water available for irrigation purposes.
12	Installation of mushroom production units	The direct production form this activity could not be verified during project implementation, due to delays. The production of mushrooms was initiated one month after project closure. Training exercises were productive and the materials distributed of good quality and durability. Marketing issues were also carefully addressed, by creating links between the beneficiaries and the potential commercial buyers (mostly belonging to the hotel industry).
13	Rearing of goats	Very successful. FAO distributed a type of goat that was well adapted to local conditions. Mortality rates were low, vaccinations were performed regularly and the reproduction rate of the animals was high. To this end, the supporting structures (huts) provided by the project revealed to be technically correct and sound.
14	Vocational training for handloom production, carpentry, engine repairs, electrical work, and plumbing.	Overall, the activity was successful, and as such provided alternative sources of income. Essential factors of success for the training were: the duration of the trainings (the project opted for trainings spanning over several months); the provision of links with the labour market and/or distribution networks; the acquisition of skills by younger individuals and ability of the project to provide the tools, equipment and/or initial capital necessary for the initiation of activities.
15	Rehabilitation of 10 x 250 metres of irrigation canals / earth bunds.	In line with the initial LoA the scope of this activity was reduced. The rehabilitation enabled the cultivation of 200 acres of previously abandoned land.
16	Construction of permanent sheds for handloom production.	Successfully completed. Construction was terminated and the appropriate machinery installed and subsequently tested. Beneficiaries are now actively producing various types of handloom, where additional follow-up and supervision is ensured through complementary UCODEP and NGOs initiatives.

17	Rearing of cows	As a result of procurement constraints the animals were distributed toward the end of project implementation. Despite this delay, the activity was successful in improving the quality of herds and the livelihoods of livestock owning communities. Project outputs included: - The regular vaccination of animals. - The identification of grazing areas. - The construction of animal sheds. - The training of beneficiaries and the provision of related training materials. - The establishment and consolidation of links with the veterinary department. - The establishment of market linkages through a local cooperative paved the way for the commercialization of milk products. The activity can therefore be evaluated as successful, thus ensuring long-term sustainability.
18	Rearing of chicken	This activity, implemented by INGOs active in the East of the country, was successful. There were doubts as to the benefits of introducing locally adapted breeds. To this end, the benefits were eroded by beneficiary tendencies to breed the newly acquired animals with those purchased from local markets. The overall effectiveness of activities was illustrated through: the proper use and design of sheds; and the user-friendly format of FAO training materials Mixed results were observed through: the follow up/links with local veterinary authorities, the effectiveness of which varied within the various districts. The reproduction rates of the animals distributed seemed good, though in some areas there were a number of cases (INGO R&C) where various animals had been sold on the local markets.
19	Mangrove reforestation	Very successful, with initial targets respected. Some delays were registered in the delivery. More important, the community involved in the plantation activities radically improved its environmental practices and a long lasting collaboration with the INGOs Sewa Lanka and IUCN was created. These are currently operating in the communities assisted by the project through other complementary activities.
20	Coconut reforestation	At project closure, 80 percent of the coconuts seedlings were healthy.
21	Reconstruction of two ice-storage units and other infrastructure	The cold storage units were successfully completed and handed over to the two selected fisher societies. An assessment of the units could only be scheduled during the main fishing season, and was therefore not carried out. However, beneficiary interviews revealed the intention and financial capacities of the two societies to manage the infrastructure. The previous infrastructure was regularly used by the society and is financially sustainable, so the overall sustainability of this activity seems to be ensured.
22	Construction of one fish processing centre	The fish processing centre was not the object of field visits by FAO staff after its termination. The visit of the audit company confirmed the completion of the building and the presence of the assigned equipment.
23	Training on nutrition and food preparation	Training was undertaken successfully. The nutritionist's evaluation demonstrated a substantial improvement in beneficiary knowledge on the principles of a balanced diet together with improving cooking skills.

24	Training on entrepreneurial development and alternative income generation for members of cooperative societies.	The training was conducted by a local NGO that was directly contacted by FAO. The NGO' aim was to support women's groups already active prior to project implementation. Impact of the classes could not be measured directly.
25	Dry fishing	Activities of dry fishing have shown mixed results. Training and equipment for dry fishing was given to beneficiaries who were already performing similar activities prior to the tsunami. This activity enabled an improvement in the quality and hygienic standards under which the drying is conducted. At the same time, the capacity to undertake dry fishing on a commercial basis was in some cases hampered by the lack of sufficient initial capital. In such cases the concerned INGOs have provided the beneficiaries with some additional physical capital (fresh fish).
26	Construction of one auction shed	Construction activities were successfully completed and both infrastructures are now regularly used by the intended beneficiaries.
27	Construction of one fisher community centre	
28	Support to activities of fish marketing	Interviews with the beneficiaries have confirmed an immediate resumption of fish vending activities with the consequent reestablishment of income.
29	Crab fattening, cages	Implementation of this activity was successful despite experiencing delays. The majority of the beneficiaries assisted by the project have started production activities. Average income per month of the beneficiaries that have started the production is considerable and has radically improved the livelihoods of assisted families. More fishers in the area are now planning to adopt the crab-fattening practices supported by the project.
30	Support to the activities of the Women Empowerment Centre, dry fishing, sale of agriculture products and meal prep.	The project successfully supported the activities of the Berwala Women Empowerment Centre, an initiative previously funded by the Italian Cooperation that was then handed over to FAO for the necessary follow up and further funding. During the period of implementation of project activities, the women group had terminated the necessary training and successfully started commercial activities.
31	Construction of a freshwater hatchery station for the production prawn seeds.	The hatchery was successfully completed by the project despite delays, i.e. within the 3 months period following project NTE. The formal evaluation of this activity was therefore not possible. Despite the absence of a formal evaluation, all the elements of sustainability have been addressed prior to its termination, specifically: - Government counterpart: the local counterpart (NAQDA) holds a proven track record in the management of similar, though smaller scale structures. Staff of the Government counterpart have been trained by FAO specialized staff as well as provided with the necessary technical guidelines. - Technical aspects of the construction have been addressed by assigning the design of the structure to one of the leading experts in Asia on freshwater prawn breeding. FAO also ensured additional technical supervision through one external engineer and one engineer belonging to the national counterpart.

		- Other aspects: the project has also addressed other essential aspects such as marketing and transportation of the final products from the beneficiaries "farms" to the exporters / processing plants, through the establishment of links with the main commercial actors in Sri Lanka. In order to allow for the necessary follow-up / start-up of the productive activities and maximize its sustainability, FAO will link to this activity through a one-year, follow-up intervention funded by the FAO Technical Cooperation Programme (TCP) in October 2007.

5.3 Impact of project activities under Result 3

Under Result 3 ("Development of a Decision Support System (DSS) for the planning and implementation of activities for aquaculture development") a DSS enabled the development of aquaculture activities. This activity was not the object of a specific impact assessment mission due to the limited budget committed for this activity.

This activity led to the definition of a DSS for the selection of aquaculture development related sites. The system was effectively used by the project for the planning and construction of the freshwater prawn hatchery station. The system was reviewed and approved by the relevant FAO technical staff through an official presentation at FAO headquarters which convened three out of the seven experts that have worked on the development of the DSS. The panel of FAO who attended the presentation fully endorsed the model.

6 CONCLUSIONS AND RECOMMENDATIONS

Result 1: Overall, the project supported the renewal of fishing activities for 4 263 fishers. Of these, 3 128 fishers who lost their assets as a result of the tsunami resumed fishing activities. Moreover, 2 100 fishers acquired knowledge on the principles of safety at sea and vessel stability, while 120 boatyard workers benefited from the distribution of equipment and training materials.

In terms of the number of beneficiaries assisted, this result has therefore consistently outnumbered the initial target by a total of 1 135 families. All activities under this result were implemented in collaboration with the relevant local authorities and key non governmental stakeholders.

Result 2: Increased the income of 600 beneficiary families through improved management of post-harvest activities and support to livelihood alternatives.

The project has directly assisted 3 205 families through the implementation of a vast range of activities within the fisheries, agriculture and forestry sectors. All activities have been implemented in close coordination with the relevant local authorities, including the MFAR, the MoA and the Ministry of Animal Health and Husbandry.

Similarly, this result has exceeded the initial planned beneficiary numbers by a total of 2 605 families. The positive output of this result was made possible through extensive collaboration

with partner National and INGOs, NGOs and CBOs, thus ensuring stakeholder synergies.

Result 3: The project supported the Development of a DSS for the development of aquaculture activities.

The DSS was successfully developed and incorporated into project activities. The model was then handed-over to the relevant local authorities and stakeholders. Local ownership enabled the Department of Environmental Studies of the University of Peradenyia to fully replicate the dynamics of the system, thereby restoring livelihoods throughout project areas.

Methodological approach

The project had a considerable impact in restoring basic livelihoods to tsunami-affected communities in the districts of Hambantota, Ampara, Batticaloa and Kalutara. In terms of the number of families assisted, the project has to date considerably exceeded the initial expectations.

During conception and implementation, the project has emphasized the following methodological aspects:

- Merging of relief activities with interventions for medium-term rehabilitation. The project merged short-term relief contexts, such as the immediate distribution and repair of assets, with medium-term interventions, such as support to livelihood diversification and capacity building of national institutions.

- Extensive involvement of national and international NGOs and CBOs for the implementation of field activities. The project fostered partnerships with INGOs, national NGOs and CBOs. The collaboration was guaranteed through an ad hoc combination of methodological approaches such as SLA based PRA studies and the use of the appropriate administrative tools.

The need to adjust some of these tools led delays in the early stages of project implementation. However, capacities were bolstered to replicate the approach in other contexts within a much more reduced time-frame.

Synergies and dynamics

During both the design and implementation of the field activities and according to the technical capacities of the individual counterparts, FAO provided its implementing partners with the necessary technical guidance while emphasizing the need to forge close partnerships with local and national authorities.

The following synergies have been established through the project:

Capacity building of NGOs and CBOs: the guidance provided by FAO contributed to

strengthening the technical capacities of national and international counterparts involved in the implementation of the project. Further, FAO fostered and encouraged a continuous, "horizontal" exchange of information among all stakeholders involved in the implementation of field activities. At the end of the project, the best performing local counterparts / CBOs benefited from the distribution and delivery of equipment such as computers, vehicles and office furniture.

Synergies with donors' activities: The involvement of INGOs provided FAO with the opportunity to work with Sri Lanka-based stakeholders. This provided the project with partners cognizant of local authorities and local administrative procedures.

Capacity building of the Ministry of Fisheries: An important component of the project focused on the construction design of vessels inferior to 24 metres in length, in addition to establishing a Certification Unit in the Ministry of Fisheries to monitor boat-building practices.

The approval of the legislation on fishing boat safety and the establishment of the Certification Unit will not only save lives but also provide sustainability to post-tsunami reconstruction efforts undertaken in Sri Lanka by various bi-lateral and multi-lateral donors. This component represents a key follow-up of activities initiated under previous FAO interventions and has the potential to become a milestone in the advancement of the Sri Lankan boat construction industry.

ANNEX 1 - UPDATED LOGICAL FRAMEWORK[12]

	INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
OVERALL OBJECTIVE	To assist the Government of Sri Lanka in its efforts to protect, rehabilitate and enhance the livelihoods of tsunami and earthquake-affected coastal communities, in a sustainable manner	Improvements in terms of living standards (consumption expenditures and community infrastructure)	Project baseline and impact surveys of fisher households.	
SPECIFIC OBJECTIVE	To provide immediate assistance to safeguard the livelihoods of affected fishers and enable them to resume fish production for nutrition and income-generation, thereby reducing dependency on food aid	- Through the project the availability of boats has returned to pre-tsunami levels. - Income of fishing families increased or maintained**.**	- In creased information from local fisher organizations including vessel registration data. - Minutes form the various coordination meetings. - Baseline surveys and impact assessments of fisher households.	- Increased political stability in project areas. - Commitment by the government, local authorities and community groups to the principles of sustainable fisheries management. - Government, donors and other development partners are willing to collaborate in a transparent manner.
EXPECTED RESULTS	**Result 1**: A total of **3 128** tsunami-affected fisher families who suffered a loss of livelihoods resumed fishing activities. **Result 2:** Increased income for 600 beneficiary families through improved management of post-harvest activities and support to livelihood alternatives.	**- 3 128** fisher families resumed fishing activities . Through the .livelihood component, 600 beneficiaries benefited from the establishment of entrepreneurial activities including fish processing equipment for traders in target communities.	- Beginning of project participatory livelihood assessments. - Records from boatyards, repair centres and workshops. - Vessel registration through the Ministry of Fisheries - Field reports, inclusive of photographs.	- Availability of manpower and human capital for construction and repair works. - Recognition by stakeholders of the need for improved fishery resource management. - Commitment by government and communities to the co-management of coastal resources.

[12] This logframe presents the final status of activity implementation at project closure. Changes to activities have been approved by the donor through operational plans for year 1 and year two of the project.

	Result 3: Development of a DSS for the planning and implementation of activities for aquaculture development.	- A DSS for aquaculture development was finalized and handed over to the relevant national authorities	- Records of cooperative societies. - Minutes of meetings. - End of project impact assessment.	- Absence of natural disasters in project areas.
ACTIVITIES	**Preparatory activities:** -Implementation of a livelihood analysis in 18 villages: *(5* villages in the district of Hambantota, 5 in the district of Ampara, 4 in the district of Batticaloa and 2 in the district of Kalutara) Activities to achieve **Result 1** *(Resumption of fishing activities)* **A.1.1** Repair of 838 damaged craft **A.1.2** Repair of 119 inboard engines and 19 outboard engines. **A.1.3** Distribution of 715 packages of fishing gear and accessories. **A.1.4** Upgrade of boatyards facilities for the construction of FRP, one-day and multi-day boats and capacity building of the relevant departments of the Ministry of Fisheries. **A 1.5** Training on safety at sea. **A 1.6** Installation of 11 inboard engines for multi day and one day boats.	**Resources** <u>*Personnel Services*</u> - 1 Senior Emergency Coordinator (12months) - HQ Technical Support - 1 Fisheries and Integrated Coastal Management Expert (12 months) - 1 Emergency Programme Officer / Coordinator (12 months) - 1 National Project Coordinator (24 months) - 1 Assistant National Project Coordinator (24 months) - 9 project officers (for 18 months) - 3 data entry specialists (for 18 months) - 1 Civil Engineer for the implementation of construction activities**.** - 3 additional national staff for the capacity building component. <u>*Casual labour*</u> - Two drivers - Secretarial work - Loading and unloading operators		

	Activities to obtain Result. 2 *(Increased income throughout fishing communities)* **A. 2.1** Construction of landing facilities and infrastructure for post-harvest and commercialization, including 1 grain storage house, 2 community centres 80' x 20', 1 auction centre, 3 ice storage units, 1 fish processing unit and 2 fisheries facility complexes. **A 2.2** Employment generation through 4 pilot projects in the fields of aquaculture and livelihood-based alternatives. **A 2.3** Training (various, as applicable) **A 2.4** Construction of new freshwater hatchery station in the district of Hambantota. **Activities to achieve Result 3** *(Management of coastal resources)* **A 3.1** The application of GIS-based methodology, development of a pilot DSS for aquaculture development. ***[A 3.2*** Training of selected communities on Integrated Costal Management Planning	<u>*Expendable equipment*</u> - Visibility: 2 000 T-Shirts Visibility Boards (various) - 119 sets of spare parts for inboard engines and 19 sets for outboard engines - Materials for the repair of: 93 Multi day boats 330 FRP boats, 400 traditional crafts Orus type 15 traditional crafts Wallam Type - Spare parts for the installation of 13 inboard engines. <u>*Non-expendable equipment*</u> - Non-expendable equipment for the installation of office premises: - Non-expendable equipment distributed to beneficiaries include: 715 kits of fishing gear and accessories, materials for the up-grade of one boatyard facility, thus ensuring the construction of FRP, one-day, and multi-day boats. - Non-expendable equipment for the implementation of the capacity building component**.** - Non-expendable equipment for the distribution to INGOs for the implementation of livelihood		

		activities. - Non-expendable equipment for aquaculture development including construction materials for the installation of pilot aquaculture farms. - Non-expendable equipment for the implementation of the capacity building component. - Non-expendable equipment to be distributed to INGOs paving the way for the implementation of livelihood activities. - Inboard engines. Non-expendable equipment for the rehabilitation of basic fishing infrastructure: This budget component was cancelled. Mobile vans / units for the repair of boats: This budget component was cancelled *Contracts* Preparation of LoAs / commercial contracts for the implementation of assessments, livelihood development activities and the construction of shore infrastructure. LoAs and commercial contracts were stipulated with the following institutions: -IPID (Nat. NGO) -APSRAC (Indian GIS research		

		centre) -University of Florence -Stream -GUS -CIPSI -ISCOS -Ucodep -R&C -Asia -Alisei -ICEI -NAQDA -Ucodep/ 2 nd local LoA -Asia / 2nd local LoA -IPID / 2nd local LoA - Sewa Lanka - Contract for the construction of new hatchery / freshwater station in the district of Hambantota. - Contracts for the construction of infrastructure and eventually other commercial entities. *Training* Training, equipment, food and beverages.		

- ANNEX 2 – SUMMARY OF BUDGET AMENDMENTS OSRO/SRL/505/ITA					
A	**B**	**C**	**D**	**E**	**F**
Component Description	**Approved budget Project Document (Euro)**	**Approved budget Project Document (US$)**	**Approved budget Operational Plan 1st Year (US$)**	**Amended budget as per Operational Plan 2nd Year (US$)**	**Amended budget March 2007 (US$)**
Personnel Services	**574614**	**770041**	**770041**	**714041**	**808321**
International / HQ costs	**436156**	**584493**	**584493**	**484493**	**578773**
Senior Emergency Coordinator (12 months)	*150000*	*201015*	*201015*	*0*	
Technical and Operational Support	*92308*	*123702*	*123702*	*123702*	
International Fisheries experts (12 man months)	*96924*	*129888*	*129888*	*183888*	
Programme Officer 12 man months	*96924*	*129888*	*129888*	*176903*	
National Consultants	**138458**	**185548**	**185548**	**229548**	**229548**
Consultants – 1 National Project Coordinator (24 months)	*20309*	*27216*	*0*	*0*	*0*
Consultants – 1 Assistant National Project Coord (24 months)	*12922*	*17317*	*185548*	*229548*	*229548*
Consultants – Project Field officers (9 x 18 months)	*83073*	*111326*			
Consultants – Data Entry specialists (3 x 18 months)	*22154*	*29689*			
Consultants – Civil Engineer (1 x 8 months)	*0*	*0*			
Consultants – Staff for capacity building (3 x 8 months)	*0*	*0*	*0*		
Casual Labour and Overtime	**61538**	**82467**	**82467**	**65268**	**65268**

Casual Labour (secretaries, security and drivers) and overtime	61538	82467	82467	65268	65268
Component Description	**Approved budget Project Document (Euro)**	**Approved budget Project Document (US$)**	**Approved budget Operational Plan 1st Year (US$)**	**Amended budget as per Operational Plan 2nd Year (US$)**	**Amended budget March 2007 (US$)**
Travel	**219385**	**293997**	**293997**	**311196**	**216916**
Duty travel others	37846	50717	50717	67916	67916
Travel - Consultants - International (48 man months)	166154	222663	243280	243280	149000
Travel – ATS	15385	20617			
Expendable Equipment	**548461**	**734993**	**497676**	**1069351**	**1069351**
Visibility	25000	33503	33503	33503	35691
Exp Equip for import of raw mat for boat repair and constr	523461	701490	464173	154157	153827
Contract with Brown Motors HQ for the repair of inboard engines		*0*		*5736*	*5736*
Contract Spare parts Ceynor for local procurement for outboard engines		*0*	*464173*	*144404*	*144074*
Spare parts for inboard engines		*0*		*2761*	*2761*
Expendable equipment for office use – software FAO office		*0*	0	*1256*	*1256*
Expendable equipment for Capacity Building Component		0	0	181000	77217
Expendable equipment for Livelihood component (INGOs)		0	0	600691	701199
Expendable equipment for aquaculture development		0	0	30000	46100
Contingency		0	0	20000	55317
Expendable equipment for installation new engines		0	0	50000	0
Non Expendable Equipment	**1469000**	**1968607**	**678937**	**1082038**	**998307**

Non-expendable equipment for the installation of office premises (cars, pre-fabricated offices, off. furniture, etc.) [3]	147692	197922	197922	149649	235726
Motorbike and vehicles purchase through HQ	*0*	*0*		*20654*	*80117*
Component Description	**Approved budget Project Document (Euro)**	**Approved budget Project Document (US$)**	*197922*	**Amended budget as per Operational Plan 2nd Year (US$)**	**Amended budget March 2007 (US$)**
Local purchase of motorbikes, computers, furniture	*0*	*0*		*128995*	*155609*
Non Expendable Equipment for distribution to beneficiaries (boats, engines and fishing gear)	567462	760456	280000	295474	343981
Fishing nets International Tender HQ	*0*	*0*	*250000*	*250052*	*250052*
Fishing Net Accessories Local tender	*0*	*0*	*30000*	*45422*	*61481*
Repair materials for boats and other vessels	*0*	*0*	*0*		*32448*
Aquaculture Development[4]	150000	201015	201015	0	0
Non Expendable Equipment for rehabilitation of basic fishing infrastructure (ice-plants)	450000	603045	0	0	0
Mobile vans / units for the repair of boats	153846	206169	0	0	0
Non expendable equipment for INGOs for livelihood development	0	0	0	40000	22221
Non expendable equipment for Capacity Building Component	0	0	0	436915	59867
Non-expendable equipment for the procurement of an approximate of 11 new inboard engines for One Day and Multi Day boats	0	0	0	140000	146599
Non-expendable equipment for the procurement of inputs for the freshwater hatchery station	0	0	0	20000	63640
Contingency	0	0	0	0	126273

Component Description	Approved budget Project Document (Euro)	Approved budget Project Document (US$)	Approved budget Operational Plan 1st Year (US$)	Amended budget as per Operational Plan 2nd Year (US$)	Amended budget March 2007 (US$)
Contracts	**832600**	**1115767**	**2042754**	**1671871**	**1755602**
Contracts- Construction Works - Rehabilitation and re-construction works for shore infrastructure, and contracts with non profit organisations in support of project activities (e.g. community development activities beneficiary selection, training and community capacity building)	832600	1115767	2042754	1402871	0
Contracts for infrastructure rehabilitation				*350000*	*200200*
Contract with Ceynor (estimate) for the repair of vessels				*77875*	*77875*
LoA with APSRAC				*47962*	*47962*
LoA with STREAM				*47962*	*47962*
LoA with IPID				*24830*	*24830*
LoA UNIFI				*19928*	*19928*
LoA Asia				*171541*	*171541*
LoA Alisei				*95686*	*10595*
LoA R & C				*92340*	*92340*
LoA ICEI				*98455*	*94855*
LoA GUS				*62845*	*62845*
LoA UCODEP				*94185*	*94185*

LoA ISCOS				*84762*	*84762*
LoA no. 2 with UCODEP / Asia (estimate)				*50000*	*49944*
LoA with ISCOS no.2				*24000*	*24555*
Component Description	**Approved budget Project Document (Euro)**	**Approved budget Project Document (US$)**		**Amended budget as per Operational Plan 2nd Year (US$)**	**Amended budget March 2007 (US$)**
LoA with local company x ISCOS training/ BDC				*15000*	*12077*
LoA with IPID x UCODEP/ Asia				*7500*	*7067*
LoA with NAQDA for technical assistance INGOs				*15000*	*0*
LoA with Sewa lanka for management I of nstallation Inboard Engines forsupport to fish transformation centre				*8000*	*0*
LoA for Yodakandyia village follow-up, No. 2 (estimate) and other sites				*15000*	*30000*
Contracts for capacity building Component (video shooting and fisherman training)			0	54000	72800
Contract for the construction of freshwater hatchery station (including external technical assistance)			0	100000	420639
Contingency			0	35000	82652
LoA District Vocational Training Centre x ICEI			*0*	*0*	*12570*
LoA Janaskatki Development Centre x R&C			*0*	*0*	*9126*
Contracts for WHU + livbestock support (constructions / East)			*0*	*0*	*25000*
LoA with MRI			*0*	*0*	*7457*
LoA for training certification unit			*0*	*0*	*28499*
Contract for earth excavation works for INGOs (canals x ICEI and tank for ISCOS)			0	70000	25988

Contract for well excavation of wells INGOs			0	10000	0
Training	**34615**	**46388**	**46388**	**65379**	**65379**
Training of project beneficiaries	34615	46388	46388	65379	65379
Component Description	**Approved budget Project Document (Euro)**	**Approved budget Project Document (US$)**	**Approved budget Operational Plan 1st Year (US$)**	**Amended budget as per Operational Plan 2nd Year (US$)**	**Amended budget March 2007 (US$)**
Training for Capacity building component		*0*	*0*	*65379*	*65379*
Training for Livelihood component		*0*	*0*		
Technical Support Services	**38462**	**51542**	**51542**	**51542**	**51542**
Report Costs	3846	5154	5154	5154	5154
Honorarium ATS	19231	25771	25771	25771	25771
Supervisory Functions of LTU	15385	20617	20617	20617	20617
General Operating Expenses	**164987**	**221099**	**821099**	**254215**	**254215**
General Operating Expenses	145000	194315	194315	194315	201705
Development of costal Area Management Programme	19987	26784	26784	0	0
Upgarde of botyard facilities for the construction of FRP, One-day and multi-day boats and capacity building of the relevant departments of the Ministry of Fisheries	0	0	600000	0	0
Transportation costs for INGOs	0	0	0	59900	50390
Support Cost	**256338**	**343519**	**342519**	**342519**	**343519**
Direct Operating Costs (6,5% of Direct Costs)	256338	343519	342519	342519	343519
Grand Total	**4200000**	**5628420**	**5627420**	**5627420**	**5628420**

ANNEX 2 Continued: Summary of budget modifications since project approval

1. Introduction

The budget is hereby presented in a way that facilitates understanding of the successive modifications, as per recorded official documentation. Specifically:

- First column (A), Component Description: this column was the object of continuous refinements during the entire period of implementation: in the original approved budget (Column B and Column C) these were very generic. In line with the indications received from the Italian Cooperation office, the budget was then (columns D, E and F) provided with a higher degree of detail in line with the contents of the Operational Plans of the 1st year and 2nd year

- Second column (B), Approved budget Project Document (Euro). This is the budget in Euro as per approved project document

- Third column (C), Approved budget Project Document (US$). This is the budget in US$ as per approved project document, as per exchange rate at the time of reception of the funds

- Fourth column (D), Approved budget as per Operational Plan 1st Year (US$). This is the **first amendment** to the budget, as per approved Operational Plan for the 1st Year and in line with decision of the second project steering committee (14th October 2005)

- Fifth Column (E), Approved budget as per Operational Plan 2nd Year (US$). This is the **second amended** budget to the budget, as per approved Operational Plan for the 2nd Year and in line with decision of the third project steering committee (28 June 2006)

- Sixth Column (F), Amended budget March 2007. This is the **third and last amendment** to the project budget, as per official e-mail / request submitted by Fernanda Guerrieri (mail dated 30th March 2007)

2. Evolution of the budget, by budget lines

- Personnel services / International HQ costs:

(D) No modifications

(E) Elimination of the emergency coordinator budget line and increase in the amount destined to the "International Fisheries experts" and to the "Programme officer", to account for the increased technical complexity of the project

(F) Increase in the amount destined to the "International Fisheries experts" and to the "Programme officer" to allow for the extension of project activities by four months

- Personnel services / National Consultants

(D) No modifications, with the exception of the elimination of the line "National Project Coordinator"

(E) Overall increase to allow for the introduction of the budget lines "Civil engineer" and "Staff for Capacity Building"

(F) No modifications

- Casual Labor and Overtime

(D) No modifications

(E) Decrease to allow the transfer of some funds to the budget line Personnel services / National Consultants

(F) No modifications

- Travel

(D) No modifications

(E) Increase in the budget line "Duty travel others" to allow for extensive travel by national staff

(F) Diminution of the budget line "travel – consultants – international" and transfer of the corresponding funds to the budget line Personnel services / International HQ costs to account for the no-cost project extension

- Expendable equipment

(D) The line "expendable equipment for import of raw material for boat..." was reduced in line with the contracts signed with the suppliers.

(E) The line "expendable equipment for import of raw material for boat..." was further reduced to account for the delivery problems registered by some of the suppliers initially contracted under the project.

The following lines were added:

- "Expendable equipment for Capacity building Component", to account for the new project component for capacity building of the MFAR that was introduced with OP for the 2nd year

- "Expendable equipment for livelihood component (INGOs)", was introduced to separate the purchase of expendable equipment for INGOs out of the budget line "Contracts". This was done only at this time (Operational Plan for the second year) as only at this time we had received the estimate of the inputs to be procured by FAO for the INGOs.

- “Expendable equipment for aquaculture development”: to account for the materials needed for the development of aquaculture, as per early results of the studies undertaken by the project technical staff

- “Contingency”

- “Expendable equipment for the installation of new engines”: to allow for the installation of new engines purchased by the project as oer OP 2nd year

(F) Adjustments were done to the various sub-budget lines to account for the latest updates and forecasts over the effective purchase of the various inputs

- Non Expendable equipment

(D) “Non expendable equipment for distribution to beneficiaries” was updated as per signed contracts with the suppliers

“Non expendable equipment for ice-plants” and of “..mobile vans for repair of boats” were eliminated to account for similar efforts / activities of other actors in the areas assisted by the project.

(E) The following lines were added:

“Non exp equipment for INGOs for livelihood development”, to separate the purchase of non-expendable equipment for INGOs out of the budget line “Contracts”.
This was done only at this time (OP 2nd year) as only at this time we had received the estimate of the inputs to be procured by FAO for the INGOs.

“Non exp equipment for Capacity Building Component” was added to account for the new component for capacity building that was introduced with the OP 2nd Year

“Non exp equipment for the procurement of .... 11 new inboard engines ..” to allow for the procurement of 11 inboard engines as per approved 2nd year OP

“Non exp equipment for the procurement of inputs for the freshwater hatchery station”, to allow for the construction of the hatchery station as per approved 2nd year OP

“Contigency”

(F) Adjustments were done to the various lines to account for the latest expenses records and purchase estimates

- Contracts

(D) The budget line “Contracts” was increased to account for the latest forecasts for the sub-contracting of activities to the INGOs.

(E) The budget lines "Contracts" was divided among all the planned contracts as per OP of the 2nd year.
A number of other contracts, or lines, were also added:

- "Contracts for capacity building component (video materials production)", to allow for specific activities under the newly approved capacity building component as per OP 2nd year

- "Contract for the construction of freshwater hatchery station". to allow for specific activities introduced by the OP 2nd year

- "Contract for earth excavation works for INGOs" and "...for well excavation for INGOs" in support of the activities implemented by the INGOs

(F) Adjustments were done to the various lines to account for the latest expenses records and purchase estimates

- Training

(D) No modifications

(E) The total of the budget was increased to allow for the introduction the lines

"Training for Capacity building Component", to account for the component that was introduced with the OP 2nd Year

"Training for livelihood component", to account for support trainings to be directly implemented by FAO in favor of the INGOs activities

(F) No modifications

- Technical Support Services

(D) No modifications

(E) No modifications

(F) No modifications

General Operating Expenses

(D) Addition of the line "Upgrade of boat yard facilities..." which was later (columns E and F) redistributed among the lines "Expendable equipment" and "Non expendable equipment"

(E) Elimination of the budget line "Development of coastal areas management plan" as per approved OP 2nd year and elimination of the budget line "Upgrade of boat yard facilities..." (the activity was not eliminated, but costs had to be redistributed among the lines "Expendable equipment" and "Non expendable equipment")

Addition of the budget line "Transport costs for INGOs", to account for the transportation costs in support to INGO activities that were previously embedded in the line "Contracts"

(F) Minor adjustments were done to the various lines to account for the latest expenses records and purchase estimates

Support costs

(D) Total was reduced by 1 000 US$ (from US$ 343 519 to US$ 342 519) due to a typing mistake

(E) No modifications

(F) Total was increased by 1 000 US$ to correct the typing mistake that was early reported in Column D

N.B.

The correct total of the project budget is US$ 5 628 420, as per columns C and F. The total of US$ 5 627 420 reported in the columns D and E was incorrect and was due to a typing mistake occurred under the line Support costs.

ANNEX 3
FISHING BOATS SAFETY (DESIGN, CONSTRUCTION AND EQUIPMENT) REGULATIONS, 2007.

FISHERIES AND AQUATIC RESOURCES ACT, NO. 2 OF 1996

Regulations made by the Minister of Fisheries and Aquatic Resources under paragraphs (c) and (f) of subsection (1) of section 61 of the Fisheries and Aquatic Resources Act, No.2 of 1996.

Colombo, , 2007. Minister of Fisheries and Aquatic Resources

REGULATIONS

1. These regulations may be cited as Fishing Boats Safety (Design, Construction and Equipment) Regulations, 2007.

2. (1) Subject to the provisions of paragraph (2) of this regulation, these Regulations shall apply in respect of new decked and undecked fishing boats which are less than 24m in length and operating within the Sri Lankan waters.

(2) The provisions of these Regulations shall not apply to fishing boats which are vessels of a type referred to in paragraph (1), that are used for sports or recreational activities.

PART I

REGISTRATION OF BOATYARDS AND THE COMPETENT AUTHORITY

Registration of Boatyards

3. (1) Every individual builder and every boat yard which is engaged in constructing fishing boats or any part thereof, shall be required to obtain a Boatyard Registration Certificate from the Competent Authority for such purpose.

(2) An application for purpose of obtaining a Boatyard Registration Certificate shall be made to the Competent Authority along with a fee of five thousand rupees and accompanied by such other documents and information as may be determined by the Competent Authority.

(3) A Boatyard Registration Certificate shall be valid for a period of one year from the date of its issue and may thereafter be renewed for a further period of one year at a time, on application made for the purpose.

(4) An application for the renewal of a Certificate issued under these regulations is required to be made to the Competent Authority one calendar month prior to the date of its expiry, accompanied by a renewal fee of five thousand rupees.

(5) At the time of the issue of a Boatyard Registration Certificate, the Competent Authority shall give a registration number to each such individual or the boat yard, as the case may be, in respect of whom or which such Certificate is being issued.

(6) An applicant or any person who is aggrieved by the decision of the Competent Authority refusing the grant of a Certificate or the renewal of a Certificate issued, as the case may be, shall be entitled to appeal against such decision to the Secretary of the Ministry of the Minister, within thirty days of being informed of such decision.

(7) The Secretary may upon receipt of an appeal under paragraph (6), make such inquires as he may consider necessary or appropriate and thereafter -

(a) allow the appeal and direct the Competent Authority to issue a Certificate or renew a Certificate issued, as the case may be; or

(b) disallow the appeal and confirm the decision made by the Competent Authority against which the appeal was made.

Competent Authority and delegation of Powers

4. (1) The Director-General of Fisheries and Aquatic Resources shall be the Competent Authority (in these Regulations referred to as the "Competent Authority") for the purpose of these Regulations, and it shall be his duty to ensure that these Regulations are applied and enforced in respect of the construction of vessels to which these Regulations are applicable, boats having regard to the type of the vessel, its intended service and its area of operation.

(2) In the performance and discharge of his duties and functions under these Regulations, the Competent Authority shall be assisted by competent officers appointed by him as Surveyors, who shall carry out their duties under the supervision and control of the Competent Authority.

(3) The Competent Authority may delegate such of the powers assigned to him under these Regulations as may be determined by him in writing made in that behalf, to an officer appointed as a Surveyor under paragraph (2) of this regulation. A Surveyor to whom any power is delegated shall be required to submit a report to the Competent Authority, on every inspection carried out by him in the exercise of the powers so delegated. A summary of such report shall also be entered in the record of the vessel that was inspected.

(4) The Competent Authority may, notwithstanding any delegation made under paragraph (2) of this regulation, himself exercise any power so delegated and may at anytime, revoke such delegation.

PART II

CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT

Construction material and structure

5. Prior to the construction of any vessel, all designs, plans and other relevant information and documents pertaining to such vessel, shall be submitted to the Competent Authority for his approval.

6. (1) The strength and construction of the hull and other structures and the equipment carried in a vessel, shall be adequate to withstand all foreseeable conditions of its intended service and be to the satisfaction of the Competent Authority.

(2) Materials used in the construction of the hull of a vessel shall be as approved by the Competent Authority.

(3) Fishing vessels or any part thereof constructed out of Glass Reinforced Plastic (hereinafter in these Regulations referred to as "GRP") shall comply with the construction requirements contained in the Instruction Manual.

Inlets and discharges

7. All sea inlets shall be fitted with valves which have a positive means of closing from a readily accessible position. Each such valve shall be provided with an indicator, showing whether the valve is open or closed.

8. Discharges passing through the hull of a vessel shall be fitted with an automatic non-return valve having a positive means of closing it from a readily accessible position and be provided with an indicator, showing whether the valve is open or closed. However an alternative arrangement may be accepted by the Competent Authority in certain circumstances, where the following requirements are complied with :-

(a) hull penetrations with openings less than 100 mm above the deepest waterline or below the floor on undecked vessels, are fitted with a means of closing; and

(b) discharges between 100 mm above and 350 mm above the deepest waterline, may be fitted with a non-return valve without a means of closing. In case of wet exhaust systems, the valve may be of a flap type and discharges more than 350 mm above the deepest waterline, are not required to be fitted with a valve.

9. Sea inlets and discharge valves not accessible in an emergency shall be fitted with a remote means of operation, such as by extended spindle or wire pull device.

10. All fittings attached to the hull and all valves and all pipes between the shell and the valves, shall be of stainless steel, bronze or other ductile material. However, other materials may be used for pipes of non-steel vessels with the approval of the Competent Authority.

11. Any penetration prone to be damaged by fishing gear, equipment or by the movement of crew members shall be suitably protected.

12. Where sea inlet piping systems comprise of flexible hose, the connections shall be fitted with double corrosion-resistant hose clips, at both ends.

Hull integrity

13. All external openings shall be capable of being closed so as to prevent water from entering the vessel. Deck openings which may be open during fishing operations shall normally be arranged near to the vessel's centreline. The Competent Authority may however approve alternative arrangements, where he is satisfied that such arrangement will not impair the safety of the vessel.

Bulkheads

14. (1) For decked vessels, bulkheads, closing devices and closures of openings in those bulkheads including methods for their testing, shall be in accordance with the specifications and standards contained in the Instruction Manual. Vessels shall be fitted with a collision bulkhead and at least with watertight bulkheads bounding the main machinery space. Such bulkheads shall be extended up to the working deck.

(2) Pipes piercing the collision bulkhead shall be fitted with suitable valves operable from above the working deck and the valve chest shall be secured at the collision bulkhead inside the forepeak.

(3) No door, manhole, ventilation duct or any other opening shall be fitted in the collision bulkhead, below the working deck.

(4) The forepeak shall not be used for carrying fuel oil.

Weather tight doors

15. All access openings in bulkheads of enclosed superstructures and other outer structures through which water could enter and endanger the vessel, shall be fitted with doors permanently attached to the bulkhead, framed and stiffened so that the whole structure is of equivalent strength to the unpierced structure and weather tight when closed.

16. The height above deck of sills in the doorways, in companionways, erections and machinery casings which give direct access to parts of the deck exposed to the weather and sea, shall be not less than 380 mm. However, where operating experience has shown

justification, the height above deck of sills in the doorways may be reduced to not less than 150 mm, with the approval of the Competent Authority.

Hatchways

17. (1) The height above deck of hatchway coamings on exposed parts of the working deck, shall be not less than 300 mm.

(2) Notwithstanding the height specified in regulation 17, where operating experience has shown justification and with the approval of the Competent Authority, the height of hatchway coamings, (except those which give direct access to machinery spaces), may be reduced from the height as specified in that regulation or the coamings may be omitted entirely, provided that efficient watertight hatch covers, other than wood, are fitted. These hatchways shall be kept as small as practicable and covers shall be permanently attached by hinges or equivalent means and should be capable of being rapidly closed or battened down.

18. (1) The hatchway covers shall have the same strength as the deck and the structural strength shall be as specified in the Instruction Manual.

(2) Covers shall be fitted with clamping devices and gaskets or other equivalent arrangements, sufficient to ensure weather tightness to the satisfaction of the Competent Authority.

Machinery space openings

19. (1) Machinery space openings shall be framed and enclosed by casings of sufficient strength. External access openings therein shall be fitted with doors complying with regulations 15 and 16 or with hatch covers complying with regulations 17 and 18.

(2) Openings other than access openings shall be fitted with covers of equivalent strength to the un-pierced structure, permanently attached thereto and capable of being closed weather tight.

Other deck openings

20. Where it is essential for fishing operations flush deck covers may be fitted, provided these are capable of being closed watertight and are permanently attached to the adjacent structure. Having regard to the size and disposition of the openings and the design of the closing devices, metal-to-metal closures may be fitted, where the Competent Authority is satisfied that they are effectively watertight.

Ventilators

21. (1) The coamings of ventilators shall be as high as practicable. On the working deck, the height above deck of coamings of ventilators other than machinery space ventilators shall be not less than 450 mm. Where the height of such ventilators can interfere with the

fishing operation of the vessel, their coaming heights may be reduced to the satisfaction of the Competent Authority.

(2) The height above deck of machinery space ventilator openings shall be to the satisfaction of the Competent Authority.

22. Coamings of ventilators shall be of equivalent strength to the adjacent structure and capable of being closed weather tight by devices permanently attached to the ventilator or to the adjacent structure. Ventilators shall be arranged as close to the vessel's centreline as possible, and where practicable, extend through the top of a deck erection or companion-way.

Air pipes

23. (1) Where air pipes to tanks and void spaces below deck extend above the working or superstructure decks, the exposed parts of the pipes shall be of strength equivalent to the adjacent structures fitted with appropriate protection and protected from damage by fishing or lifting gear. Openings of pipes shall be provided with means of closing, permanently attached to the pipe or adjacent structure, except that where the Competent Authority is satisfied that they are protected against water trapped on deck, these means of closing may be omitted.

(2) The height of air pipes above deck to the point where water may have access below shall be not less than 450 mm on the working deck. The Competent Authority may however permit a reduction of the height of an air pipe in order to avoid interference with the fishing operations.

(3) Provision shall be made to prevent a vacuum forming in the pipe or tank.

(4) Exposed air pipes in excess of 25 mm in diameter serving fuel oil and all other oil tanks, shall be fitted with anti-flame net protection or other equivalent devices.

Sounding devices

24. (1) Sounding devices shall be to the satisfaction of the Competent Authority and be fitted to the bilges of those compartments which are not readily accessible at all times during the voyage and to all tanks and cofferdams.

(2) Where sounding pipes are fitted, their upper ends shall be extended to a readily accessible position and where practicable, above the working deck. Their openings shall be provided with permanently attached means of closing.

(3) Sounding arrangements on fuel service tanks shall be as such that in the event of the tanks being overfilled, spillage through the means of sounding cannot occur.

(4) Fuel tank sounding pipe openings shall not be located in the area used as crew accommodation.

25. Where a dip stick is used to measure the fuel tank level, the sounding pipe shall be provided with a proper striker plate to avoid tank bottom damage.

Sidescuttles and windows

26. (1) Sidescuttles to spaces below the working deck and to enclosed spaces on the working deck, shall be fitted with hinged deadlights capable of being closed watertight.

(2) No sidescuttle shall be fitted in such a position that its sill is less than 500 mm above the deepest operating waterline.

(3) Sidescuttles fitted less than 1000 mm above the deepest operating waterline, shall be of the fixed type.

(4) Sidescuttles together with their glasses and deadlights, shall be of such construction as approved by the Competent Authority. Those prone to be damaged by fishing gear, shall be suitably protected.

27. Skylights leading to spaces below the working deck shall be of substantial construction and be capable of being closed and secured weathertight, having provision for adequate means of closing in the event of damage to the inserts. Skylights leading to machinery spaces shall be avoided as far as practicable.

28. Toughened safety glass or suitable permanently transparent material of equivalent strength, shall be fitted in all wheelhouse windows exposed to the weather. The means of securing windows and the width of the bearing surfaces shall be adequate, having regard to the window material used.

29. Openings leading to spaces below deck from a wheelhouse whose windows are not provided with the protection as required by regulation 30, shall be fitted with a weather tight closing appliance.

30. (1) A suitable number of storm shutters shall be provided where there is no other method of preventing water from entering the vessel through a broken window.

(2) The Competent Authority may accept windows without storm shutters, where he is satisfied that the safety of the vessel will not be impaired as a result.

Freeing ports

31. (1) Care should be taken to ensure the quick release of water trapped on deck. Where freeing ports are fitted with locking devices, the opening mechanism shall always be easily accessible.

(2) Where the main deck is prepared for carrying deck load by dividing it with pound boards or any division capable of trapping water, there shall be slots between them of suitable size to allow easy flow of water to freeing ports.

(3) Where water is apt to accumulate on exposed deck, scupper shall be provided to drain water overboard.

(4) The size, number and location of freeing ports and scuppers shall be sufficient to drain water overboard from exposed deck as specified in the Instruction Manual.

Anchor and mooring equipment

32. Anchor and mooring equipment designed for quick and safe operation shall be as approved by the Competent Authority, and all anchor and mooring equipment shall comply with the specifications provided for in the Instruction Manual.

Working spaces within an enclosed superstructure

33. Working spaces within an enclosed superstructure shall be arranged to the satisfaction of the Competent Authority, taking into account where practicable:-

(a) efficient drainage;
(b) openings necessary for fishing operations;
(c) means of escape;
(d) stowage of catch;
(e) headroom; and
(f) ventilation.

Tanks for fish in refrigerated sea water or chilled sea water

34. (1) Where tanks for fish in refrigerated sea water or chilled sea water or any similar tank systems are used, such tanks shall be provided with a separate permanently fitted arrangement for the filling and emptying of sea water.

(2) Where the above mentioned tanks are to be used also for other purposes, the tanks shall be arranged with a bilge system and be provided with adequate means to avoid ingress of water from the bilge system, into the tanks.

Drainage

35. Means shall be provided for any partial decks either inboard or outboard, to be adequately drained.

Securing of heavy items

36. Means shall be provided to secure all heavy items of equipment in position to prevent movement, when the vessel is at sea.

PART III

STABILITY AND ASSOCIATED SEAWORTHINESS

General

37. Vessels shall be designed and constructed in a manner that satisfies the requirements of this Part and particularly the operating conditions referred to in regulations 44, 45 and 46. Calculations of the righting lever curves shall be as specified in the Instruction Manual and be to the satisfaction of the Competent Authority.

38. Wherever practicable, guidance shall be provided for an approximate determination of the vessel's stability, by means of the rolling period test as specified in the Instruction Manual.

Stability criteria for decked vessels

39. The following minimum stability criteria shall be satisfied by all decked vessels, unless the Competent Authority is satisfied that operating experience justifies a departure there from:-

(a) the area under the righting lever curve (GZ curve) shall not be less than 0.055 m-rad up to 30° angle of heel and not less than 0.090 m-rad up to 40° or the angle of flooding θ_f, if this angle is less than 40°. Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of 30° and 40° or between 30° and θ_f, if this angle is less than 40°, shall not be less than 0.030 m-rad. θ_f is the angle of heel at which openings in the hull, superstructures or deckhouses which cannot rapidly be closed watertight commence to immerse. In applying this criterion small openings through which progressive flooding cannot take place, need not be considered as open;

(b) the righting lever GZ shall be at least 200 mm at an angle of heel equal to or greater than 30°, however the righting lever GZ may be reduced to the satisfaction of the Competent Authority, but in no case by more than 2(24-LOA)%, where length overall (LOA), in metres, is as defined in paragraph (1) of regulation 179;

(c) the maximum righting lever GZ max shall occur at an angle of heel, preferably exceeding 30° but not less than 25°; and

(d) the initial metacentric height GM_0 shall not be less than 350 mm.

40. Where ballast is provided to ensure compliance with regulation 39, its nature and arrangement shall be to the satisfaction of the Competent Authority. Ballast shall be secured in the vessel in such a way, that it will not move even if the vessel is inclined to 90°.

Alternative stability criteria for decked vessels

41. For decked vessels for which by reason of insufficient stability data regulation 39 cannot be applied or where the Competent Authority is satisfied that operating experience justifies departure from the stability criteria specified in that regulation, one of the criteria specified in the Instruction Manual shall be used as the criterion.

Flooding of fish-holds

42. For decked vessels, the angle of heel at which progressive flooding of fish-holds could occur through hatches which remain open during fishing operations and which cannot rapidly be closed, shall be not less than 20°, unless the stability criteria specified in regulation 39 can be satisfied, with the respective fish-holds partially or completely flooded.

Particular fishing methods

43. (1) Vessels engaged in particular fishing methods where additional external forces are imposed on the vessel during fishing operations, shall meet the stability criteria specified in regulation 39, enhanced if necessary, to the satisfaction of the Competent Authority.

(2) Vessels on which equipment for shooting and hauling of fishing gear has been installed, shall not heel more than 10° when the maximum weight is being lifted.

Operating conditions for vessels

44. The number and type of operating conditions to be considered shall be to the satisfaction of the Competent Authority and where appropriate, shall include the following :-

(a) departure for the fishing grounds with full fuel, stores, ice, fishing gear, etc.;

(b) departure from the fishing grounds with full catch, 30% stores, fuel, etc.;

(c) arrival at home port with full catch and 10% stores, fuel etc.; and

(d) arrival at home port with 10% stores, fuel, etc. and minimum catch, which shall normally be 20% of full catch but may be up to 40%, provided the Competent Authority is satisfied that operating patterns justify such a value.

45. In addition to the operating conditions specified in regulation 44, the Competent Authority shall also be satisfied that the minimum stability criteria specified in regulations 39 and 40 are met under all other actual operating conditions, including those which produce the lowest values of the stability parameters contained in these criteria. The Competent Authority shall further be satisfied that those special conditions associated with a change in the vessel's mode or areas of operation which affect the stability considerations of this Part, are taken into account.

46. Concerning the conditions specified to in regulation 44, the calculations shall include the following:-

(a) allowance for the weight of the wet fishing nets and tackle, etc. on deck;

(b) homogeneous distribution of the catch, unless this is inconsistent with practice;

(c) catch on deck, if anticipated, in operating conditions specified paragraphs (b) and (c) of regulation 44 and in regulation 45; and

(d) allowance for the free surface effect of liquids and if applicable, catch carried.

Inclining test for decked vessels

47. Every decked vessel for which the stability criteria's in regulation 39are used, shall undergo an inclining test upon its completion, and the actual displacement and position of the centre of gravity shall be determined for the light ship condition.

48. Where alterations are made to a vessel affecting its light ship condition and the position of the centre of gravity, the vessel shall, if the Competent Authority considers this necessary, be re-inclined and the stability information revised.

Built-in buoyancy for undecked vessels

49. Every undecked vessel shall be fitted with buoyancy compartments which shall be filled with solid buoyancy material to the satisfaction of the Competent Authority, distributed so that the vessel will stay afloat and on an even keel in order that bailing is possible, without listing if flooded. This buoyancy shall be demonstrated by a calculation and/or by a practical test as specified in the Instruction Manual.

Stability information

50. Suitable stability information to the satisfaction of the Competent Authority, shall be supplied by the builder to enable the skipper of a vessel to assess with ease the stability of the vessel under various operating conditions. Such information shall include specific instructions to the skipper warning him of those operating conditions which could adversely affect either the stability or the trim of the vessel.

51. The stability information referred to in regulation 50 shall be posted on board, readily accessible at all times and inspected at the periodical surveys of the vessel to ensure that it is still valid.

52. Where alterations are made to a vessel affecting its stability, revised stability calculations shall be undertaken to the satisfaction of the Competent Authority. If the

Competent Authority requires that the stability information be revised, the new information shall be supplied to the skipper and the superseded information removed.

Portable fish-hold divisions

53. The catch shall be properly secured against shifting which could cause danger to the trim or heel of the vessel. The scantlings of portable fish-hold divisions, if fitted, shall be in accordance with the recommended practice on portable fish-hold divisions, as set out in the Instruction Manual.

Bow height

54. The bow height shall be to the satisfaction of the Competent Authority, to prevent the excessive shipping of water and shall be determined taking account the seasonal weather conditions and the design category in which the vessel is intended to operate and its mode of operation.

Maximum permissible operating draught

55. The maximum permissible operating draught shall be to the satisfaction of the Competent Authority and shall be such that, in the associated operating condition the stability criteria of this Part and the provisions of Part II and VI, as appropriate, are satisfied.

PART IV

MACHINERY AND ELECTRICAL INSTALLATIONS

A -MACHINERY

General

56. Machinery and electrical installations to be used in vessels shall be designed, constructed and installed in accordance with good engineering practice. Equipment shall be installed, protected and maintained so as not to constitute a danger to persons and to the vessel.

57. (1) Layout and installation of machinery spaces and propulsion machinery shall be designed for safe and efficient operation.

(2) Access to machinery spaces shall be arranged clear of any moving or heated surfaces and the latter shall be sufficiently insulated. Effective guards shall protect exposed moving parts such as shafts, drive pulleys and belts, and access ladders shall be securely fixed to the vessel's permanent structure and shall be of a metal such as steel, where practicable.

58. Lighting shall be watertight where practicable, and designed to facilitate easy inspection and be unaffected by vibration.

59. Ventilation shall be provided either by mechanical fans or natural vents to meet the air requirements of the propulsion machinery and to prevent build-up of fumes and excessive heat.

60. Floor plates where fitted, shall not be slippery and be securely fastened with accessible fasteners.

61. Tools, spare parts and spare gear required for routine maintenance and simple repairs shall be provided for all machinery and equipment and shall be securely stowed in an easily accessible place as specified in the Instruction Manual.

Propulsion Machinery and Stern Gear

62. Propulsion engines and associated stern gear shall be of a design, type and rating to suit the design and size of the vessel, taking into account the operating conditions and the area of operation of the vessel.

63. (1) Inboard engines shall in general be diesel powered, but however in the case of undecked vessels, inboard petrol engines may be fitted.

(2) A vessel fitted with an inboard engine shall have adequate means and power for going astern in order to maintain control of the vessel in all foreseeable circumstances.

64. Outboard engines shall be securely mounted on a substantial transom. Outboard engines with output more than 15kW shall be surrounded by an overboard drained well, large enough to allow the engine to be tilted entirely above the waterline in parked position. Undecked vessels shall have alternative means of propulsion, such as oars, paddles or sails.

65. Flexibly mounted engines shall be fitted with short flexible connections of an appropriate type fitted to associated piping and exhaust systems. Flexible shaft couplings shall be properly constructed and be suitable for the power being transmitted.

Shaft and propeller

66. (1) The propeller shaft and any intermediate shaft, together with the stern tube, bearings and bushes shall be properly constructed and operate efficiently. Shaft materials, diameter and eventual free span between bearings shall be suitable for the power being transmitted and be according to the requirements of the person constructing the vessel. Inboard stern glands shall be accessible for adjustment.

(2) As a minimum, the shaft diameter shall be:

$$d = k * \sqrt[3]{\frac{p}{r}}$$

where:

d = shaft diameter in mm

p = Maximum Continuous Rating in kW

r = propeller revolutions per second

k = 30 for carbon steel

= 23 for AISI 316

= 22 for AISI 431

= 21 for AISI 429

= 18 for CuNi K500

Engine starting

67. All propulsion engines except those engines fitted with hand starting arrangements, shall be provided with a secondary means of starting.

Controls and Instruments

68. (1) The controls shall be properly constructed and operate efficiently. Instrumentation system for the propulsion engine shall be illuminated and where practicable, show the following parameters:-

(a) Revolution Per Minute (RPM);

(b) Cooling water temperature;

(c) Lubricating oil pressure;

(d) Engine reverse/reduction gear box oil pressure gauge;

(e) Ammeters for batteries;

(f) Exhaust temperature gauge (on engines of 250 kW and above);and

(g) Running hour meter.

(2) High water temperature and low lubricating oil pressure alarms shall be fitted, where practicable.

69. Propulsion engines fitted below deck in a machinery space and arranged for remote operation from the wheelhouse or helm position, shall be provided with an arrangement on or adjacent to the engine to the stop it.

Steering Gear

70. (1) The steering arrangements including the rudder and associated fittings shall be of adequate strength and be capable of steering the vessel at maximum speed. They shall also be so designed and constructed in such a manner that they are not damaged at maximum astern speed or by manoeuvring during fishing operations.

(2) All parts of the steering gear shall be easily accessible for maintenance and comply with the specifications contained in the Instruction Manual.

(3) Vessels shall be provided with an alternative means of steering which will operate if the main system fails, and these may include a steering oar.

Piping Systems

71. (1) Piping materials including plastic piping, shall be suitable for their intended purpose and in selecting the appropriate material to be used, it should be ensured that there will be no failure or degradation of the pipe as a result of any reaction with the fluid.

(2) Valves, piping and flexible hoses shall be of sound and efficient construction and installation. All piping systems shall be well supported with pipe clips or mounts and protected against vibration and chafing or wear.

(3) Where pipe work is replaced, alignment of the replaced part shall be as close as possible to the original.

72. Flexible connections shall be of an appropriate armoured fire-resistant hose with screw fittings, and kept as short as practicable, and readily accessible.

Fuel Oil Installations

73. (1) Tanks for fuel oil shall be of sound and efficient construction and be safe in operation located away from heated surfaces and not be situated above hot surfaces and electrical equipment.

(2) Tanks and piping shall be arranged to minimise in the event of leakage or rupture, the possibility of the fuel coming into contact with hot surfaces or electrical components.

(3) All fuel tanks shall be fitted either with a level gauge or able to be sounded manually.

(4) Glass contents gauges, where fitted, shall have self-closing valves at the base.

(5) Metal rods or slotted covers shall protect sight glasses.

(6) Fixed tanks shall be fitted with separate filling and air pipes.

(7) On the fuel pipe line, there shall be mounted as close as possible to the tank, a closing valve which also can be closed from outside the engine room. There shall be a drain valve as close as possible to the tanks lowest point.

(8) There shall be a drain valve as close as possible to the tanks lowest point.

74. (1) Petrol tanks shall not be integral with the hull structure. An efficient system shall be installed to ensure that petrol does not spill into the hull of the vessel when tanks are being filled. Petrol filling systems shall be effectively bonded or earthed.

(2) Portable petrol tanks for outboard motors shall be secured when in use and arranged in a way that they can be taken ashore for filling.

Cooling Water Systems

75. The piping and fittings are to be of sound construction and efficient in operation and should comply with the following requirements:-

(a) cooling water inlets for main and auxiliary machinery, shall be kept to a minimum and comply with the requirements of sea inlets, specified in regulations 7 to 12;

(b) sea inlet trunks or boxes built into the hull structure shall be of such a design, that they remain below the waterline at all normal conditions of trim and heel, and shall be fitted with arrangements for purging of trapped air;

(c) the sea inlet pipe to the propulsion engine shall be fitted with an accessible strainer;

(d) where a common sea main supplying a number of services is installed, each branch pipe shall be fitted with an easily accessible isolating valve, with open/closed indication;

(e) where practicable, decked vessels with a single sea water cooling supply to the propulsion engine, shall be fitted with an additional hose connection with a valve, whereby an emergency supply of cooling water from another pump that has a sea suction, may be introduced in the event of blockage of the main sea inlet valve; and

(f) when modifications are made, particular care shall be made in the selection and installation of appropriate materials and comply with the requirements in paragraphs (2) and (3) of regulations 71 and paragraph (1) of regulation 83.

Bilge Pumping Systems

76. (1) Decked vessels shall have an efficient bilge pumping arrangement fitted, and where practicable, each watertight compartment shall have one bilge suction and each such suction shall be fitted with an easily cleanable filter.

(2) Undecked vessels not fitted with a bilge system, shall have means of manual bailing such as a bucket, bailer or hand operated bilge pump.

Bilge Pumps

77. (1) All decked vessels shall have at least one hand bilge pump and decked vessels with inboard engines, shall in addition have at least one power-driven bilge pump fitted.

(2) The power-driven pump referred to in paragraph (1) may be any pump, provided that any sea connection to the pump is isolated from the bilge suction main by a switch cock or interlocked valve system, so that sea water cannot drain into the bilge main.

(3) Where a deck wash pump is also utilised for bilge suction purposes, means shall be provided to prevent flooding of any compartment from the sea inlet via the bilge main.

78. Where watertight bulkheads are fitted, means shall be provided in the piping system to prevent any leakage via the system from one compartment to another, and/or from the sea inlet to a compartment.

79. In all vessels except where the bilge can be readily seen, an audible and visible bilge level alarm shall be fitted where practicable, to indicate leakage of water into the machinery space. Indication shall be at the helm or control position.

Bilge pump installation in vessels above 15m but less than 24m in length overall

80. (1) A ballast pump or other general service pump of sufficient capacity may be used as a power driven bilge pump. Power bilge pumps shall be capable of giving a speed of water of at least 2 m/s through the main bilge pipe, which shall have an internal diameter of at least:-

$$d = 25 + 1.68\sqrt{L(B + D)}$$

where d is the internal diameter in mm, and L, B and D are in metres.

(2) The internal diameter (in mm) of the branch pipes (d_b) shall be calculated using the following formula:-

$$d_b = 25 + 2.15 \sqrt{C\,(B+D)}$$

where C is the length in metres of the compartment considered.

(3) The capacity (m^3/h) of the bilge pump (Q) shall be calculated using the following formula:-

$$Q = (5.75/10^3) \times d$$

(4) The actual internal diameter of the bilge main may be rounded off to the nearest standard size as shall be acceptable to the Competent Authority. The manually operated pump shall be fitted outside the machinery space, and in no case shall the capacity of the bilge pump(s) be less than the capacity of the installed fire pump(s).

(5) The inside diameter of the bilge main and bilge suction pipe directly connected to the pump, shall be not less than the inside diameter of the bilge pump suction inlet.

(6) Bilges in machinery spaces shall be provided with a high level alarm in such a way, that the accumulation of liquids is detected at normal angles of trim and heel. The detection system shall initiate an audible and visual alarm in the places where continuous watch is maintained.

(7) For the machinery space, direct bilge suction shall be supplied.

Bilge pump installation in vessels above 6m but less than 15m in length overall

81. Each vessel shall be fitted with two bilge pumps with a minimum total capacity of 140 litres per minute, one of which shall be a power driven pump with a minimum capacity of 70 liters per minute.

Exhaust Systems

82. (1) Engine exhaust systems of the dry or water-injected type which discharge through the hull below the deck at the side or stern, shall be provided with means of preventing back flooding into the hull or engine, through the exhaust system. This may be by system design, valve or non-return device.

(2) The exhaust systems shall be of sound construction and hoses of a suitable material, well supported, free from defects and not in contact with combustible materials and should comply with the specifications contained in the Instruction Manual.

Sea Water Systems - Materials for Valves and Associated Piping

83. (1) Valves, pipes and fittings serving as sea inlets and discharges attached directly to the hull of the vessel below the loaded waterline, shall be of stainless steel, bronze, or other equivalent and compatible material. Care should be taken not to use dissimilar metals when joints are required and particularly when lengths of pipe are replaced.

(2) The sea inlet valve shall be as close as possible to the hull. Where the sea inlet valve or fitting is connected to the hull by means of a tube or distance piece, the tube or distance piece shall be of a material that is compatible with the hull and valve.

Hydraulic Systems

84. The design and installation of hydraulic piping systems shall ensure the lowest possible risk of leakages, noise and pipe failure. To enable noise reduction, expansion pieces shall be fitted on supply lines.

Refrigeration Systems

85. (1) Refrigeration systems shall be so designed, constructed, tested and installed so as to take account of the safety of the system. The emission of refrigerants held in

quantities or concentrations which are hazardous to human health or to the environment, shall be to the satisfaction of the Competent Authority. Refrigeration systems shall also comply with the requirements contained in the Instruction Manual.

(2) Refrigerants to be used in refrigeration systems shall be to the satisfaction of the Competent Authority. However, methyl chloride or CFCs' whose ozone-depleting potential is higher than 5% of CFC-11, shall not be used as refrigerants.

Ventilation of engine room

86. Where fitted, the separate engine room air intake shall be of a size capable of meeting the engine manufacturers' requirements, but not less than $10cm^2/kW$. The engine room air intake shall be located on the opposite side of the vessel to the engine air intake. The ventilation duct shall be provided with means of closing outside the engine room

B - ELECTRICAL INSTALLATIONS

Main source of electrical supply

87. (1) When electrical power constitutes the only means of maintaining auxiliary services essential for the propulsion and safety of the vessel, a main source of electrical power shall be provided.

(2) In vessels above 15m but less than 24m in length overall (LOA) the main source of electrical power shall be provided by two generator sets, one of which may be driven by the main engine. The Competent Authority may where operating experience justifies departure from this, accept other arrangements having equivalent electrical capacity.

(3) The electrical generating system where fitted, shall have sufficient capacity in normal operating conditions to ensure the correct operation of all safety and navigational equipment, including navigation and fishing lights.

Emergency source of electrical power

88. There shall be a minimum of two battery banks on board.

89. (1) All vessels operating less than 20 nautical miles from shore, shall be equipped with an emergency accumulator battery bank capable of supplying the emergency lights, radio communication equipment and the navigation lights, for not less than three hours.

(2) The emergency battery shall receive constant charging from the main (electrical generator) engine. The battery shall where practicable, be located outside the machinery space above deck or as high as possible and be so arranged as to ensure functionality in the event of fire or other causes of failure to the main electrical installations.

(3) On vessels without hand starting ability of the main engine, one emergency starting battery shall be installed with capacity according to the engine manufacturers'

requirements and to the satisfaction of the Competent Authority. This battery could be the same battery that supplies other consumers onboard, provided it has enough capacity to start the engine.

(4) Batteries shall be fitted in enclosed boxes or trays with covers and provided with sufficient ventilation for the battery to avoid the risk of explosion, away from sources of ignition. Battery boxes shall be sited clear of heat sources and where they are least likely to be flooded. Where batteries are sited in accommodation spaces, the boxes shall be sealed and ventilated to open air.

(5) Each battery or bank of batteries shall have a spark proof isolating switch. Systems such as automatic bilge pumps or alarms used when the vessel is unattended, shall be connected before the cut-off switch.

(6) A means for checking the charge of the battery shall always be available.

(7) Batteries positioned in the engine compartment shall be so arranged as not to short circuit when the compartment is flooded up to the loaded waterline. The batteries shall be securely fastened to avoid movement due to the motion of the vessel.

(8) Battery installations of more than 5 kWh, equivalent to 208 Ah at 24 V and 416 Ah at 12 V, shall be placed in a separate compartment with ventilation to open air. The arrangement shall be such so that the air circulation is not blocked.

(9) Where the main and/or auxiliary engines are fitted with electric motor starters, the batteries connected to the system for starting shall be separate from the batteries used for other services. The starter batteries shall be capable of starting the engine at least six times, without recharging.

Precautions against shock, fire and other hazards of electrical origin

90. The design and installation of electrical systems shall be such that the risk of fire and electrical shock to operating personnel is minimised.

91. (1) Cables used should be capable of carrying the maximum rated current for the circuit. The cross sectional area shall be sufficient to ensure that a voltage drop will not exceed 6% of the nominal rating under maximum rated load for the circuit. Electrical wiring shall be of marine grade multi-strand tinned copper wire cores, with an approved insulated cover.

(2) Except where authorized by the Competent Authority in exceptional circumstances, all metal sheaths and armour of cables shall be electrically continuous and be earthed.

(3) Cables which are not provided with electrical protection shall be kept as short as possible and be “short circuit proofed”, meaning a single core with an additional insulating sleeve over the insulation of each core. Normal marine cable which is single core without an additional sleeve shall be sufficient for this purpose, since it has both conductor insulation and a sheath.

(4) Cable installations shall be of the correct current carrying capacity for their application and in selecting cables, particular attention shall be given to environmental factors such as temperature and contact with substances, such as polystyrene, which degrades PVC insulation. The cables shall be at least of a flame-retardant type.

(5) The Competent Authority may permit the use of special types of cables when necessary for particular applications, such as radio frequency cables, which do not comply with the requirements specified in this regulation.

(6) Cables shall not be run below floor plate level, except where this is necessary for connections to underwater equipment and such like. The cable shall be run through a protective pipe/shield or conduit.

(7) Cables running through machinery spaces shall be secured with suitable clips and installed as not to impair the flame retarding properties.

(8) Cables running through fish holds shall be fitted in conduits and cables shall not be secured directly to fuel or oil storage tanks.

Electrical systems

92. (1) The installation of electrical equipment shall comply with the requirements contained in the Instruction Manual.

(2) In the installation of electrical equipment, particular attention shall be given to protection against water ingress and the effects of vibration.

(3) All electrical circuits shall be clearly identified on switchboards and distribution boards, including service, protective device rating, current carrying capacity and voltage values. Differing voltages shall not be included in any one distribution board, unless permitted by the Competent Authority.

(4) All electrical circuits for consumers larger than 5A, (except the main supply from the battery to the starter motor), shall be provided with fuses or circuit breakers, to provide protection against overload and short circuit.

93. Piping conveying liquid shall not be fitted above or close to switchboards or other electrical equipment, and where such arrangements are unavoidable, provision shall be made to prevent leakage damaging the equipment.

94. Taking into consideration the design of the system and the working voltage, the Competent Authority may require a system of earth indicator lamps or means of detecting current leakage to be installed.

Direct current systems

95. (1) Direct current installations shall be wired as insulated return systems, but the hull shall not be used to carry current.

(2) The Competent Authority may approve the following direct current generating and distribution systems, provided these are suitable for the intended purpose:-

12 V
24 V

(3) The two-wire system shall be used in steel and aluminium vessels. In GRP and wooden boats where suitable earthing systems are not fitted, the single wire system may be used.

Alternating current systems

96. (1) The Competent Authority may approve alternating current systems of over 220 V, provided that these are suitable for the intended purpose.

(2) Cables for alternating current systems shall be kept separate from direct current systems and run in separate trays and conduits, unless approved by the Competent Authority.

(3) Switchgear for alternating current systems shall be fitted in switchboards and panels which are separate from those containing direct current systems, unless approved by the Competent Authority. Systems and equipment shall be clearly marked.

(4) Switchgear and sockets shall be so arranged as to prevent the fitting of low voltage equipment and lamps, into high voltage systems.

Earthing and bonding

97. (1) Earthing systems shall be sound and efficient and should be such that no danger to the system or vessel can occur. Hull earth plates, where fitted, shall be efficiently connected and not painted over.

(2) In steel and aluminium vessels, non-conducting exposed metal parts of electrical equipment that requires to be earthed, shall be effectively earthed to the hull.

(3) On wood and composite vessels, a continuous ground conductor shall be installed to facilitate the grounding of non-conducting exposed metal parts of electronic and communication equipment that requires to be earthed, and the conductor shall terminate at a point on the main engine or at a copper plate of area not less than 0.2m², fixed to the keel below the light waterline so as to be fully immersed under all conditions of heel. Inside the hull, the earth plate shall be connected to a copper bar or rod of at least 64mm², the length being appropriate to the number of bonding points.

(4) Every earthing conductor shall be of copper or other corrosion-resistant material and shall be securely installed and protected where necessary, against damage and against electrolytic corrosion.

(5) Exposed permanently fixed metal parts of electrical machines or equipment which are not intended to be "live" but which are liable under fault conditions to become "live", shall be earthed, unless they are :-

(a) supplied at a voltage not exceeding 55 volts direct current or 55 volts root mean square between conductors and auto-transformers, shall not be used for the purpose of achieving this alternative current voltage;

(b) supplied at a voltage not exceeding 250 volts by safety isolating transformers supplying only one consuming device; or

(c) constructed taking into account the principle of double insulation.

(6) Lightning conductors shall be attached directly to the earth plate.

(7) Radar, radio and other navigational equipment that requires to be earthed, shall have a separate earthing point and the connection shall be as short as possible.

(8) Where a flexible non-conducting coupling is fitted between the engine and the propeller shafting, the coupling shall be bridged by a piece of braided copper conductor.

Lighting Systems

98. (1) Lighting of normally unattended spaces such as fish rooms and net stores, shall be controlled from outside the space.

(2) Emergency lighting shall be supplied from an accumulator battery and shall be placed at stairways, exits, machinery spaces, control station and where survival craft are positioned. An emergency source of power shall be made available for a signalling lamp, if being carried.

Electric motors

99. Every electric motor shall be provided with a means of starting and stopping, located in a manner that enables it to be easily operated by the person controlling the motor.

100. The circuit supplying the motor shall be fitted with short circuit and overload protection. In the case of motors in a steering gear system that are not required to be so protected, an overload alarm shall be provided at the helm. However, protection against excess current, if provided, shall be set at not less than twice the full load current of the motor or circuit and shall be arranged to allow the passage of the appropriate starting current.

101. Fans and pumps driven by electric motors shall be fitted with a remote control and such remote control shall be positioned outside the machinery space concerned, to enable the motors to be stopped in the event of a fire in the space in which they are located.

Lightning Conductors

102. (1) Lightning conductors shall be fitted on wooden masts. They shall be of continuous copper tape or copper rope having a cross section of not less than 75mm² and secured to a copper spike of 12mm diameter, projecting at least 150mm beyond the top of the mast. All sharp bends shall be avoided and bolted or riveted joints alone may be used.

(2) In the case of metal hulls, the lower end of the conductor is to be earthed to the hull and in the case of wood or other non-metallic hulls, the lower end of the conductor is to be attached to the earth plate. All sharp bends must be avoided and bolted or riveted joints alone shall be used.

Anodes

103. Where applicable, vessels shall be fitted with adequate numbers of zinc or equivalent anodes, suitable for the areas to be protected. Anodes fitted in the propeller aperture shall be positioned in such a way that they do not disturb the flow of water to the propeller. Anodes shall not be painted over and shall not be fitted close to earthing plates.

Equivalency

104. Electrical installations which do not comply with the requirements of this Part may be accepted, provided that they are unavoidable and there are justifiable reasons precluding compliance and that the electrical installations used are deemed by the Competent Authority to be equivalent to the requirements specified in this Part.

PART V

FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION AND FIRE FIGHTING

A - GENERAL

Structure

105. (1) Fire retardant materials shall be used in any part of the vessel where the risk of fire is increased due to the proximity of heat sources.

(2) Manholes or other openings to fuel oil tanks, shall not be positioned in the area provided for accommodation.

(3) Fire fighting appliances shall be maintained, as required by the manufacturer of such fire-fighting appliance and to the satisfaction of the Competent Authority.

Storage of gas cylinders

106. (1) Cylinders which contain flammable or other dangerous gases, shall be stored and suitably secured on the open deck and in a shelter which is designed to protect them from external heat sources, sun and external impact. It is further recommended that gas detectors are carried onboard.

(2) All pipes conveying gas from cylinder to appliances for domestic purposes, shall be of steel or other material approved by the Competent Authority. Where appropriate the Competent Authority may permit alternative arrangement which provide an equivalent measure of safety.

Miscellaneous items

107. (1) The Competent Authority shall ensure that materials used as deck coverings and for fittings do not have low spontaneous combustion temperatures or have explosive qualities when exposed to abnormal heat sources. However wood, GRP or other similar materials are permitted to be used.

(2) The Competent Authority shall further ensure that materials used onboard do not emit excessive toxic vapours, if ignited.

(3) In the event of a fire in a space containing machinery, it should be possible to stop the machinery from a location outside the machinery space.

B - UNDECKED VESSELS

Number of fire fighting appliances

108. Undecked vessels shall be provided with fire extinguishers of a type and size approved by the Competent Authority and such extinguishers shall be located close to the machinery space.

C - DECKED VESSELS

Number of fire fighting appliances

109. (1) The structure and equipment required to be installed in decked vessels shall comply with the specifications provided in the Instruction Manual.

(2) Vessels shall carry not less than two appropriate fire extinguishers, one of which shall be located near the machinery space. Where only two fire extinguishers are provided, a fire bucket painted in red and filled with sand shall also be carried.

(3) Vessels fitted only with outboard engines may dispense with one fire extinguisher.

Fire Fighting Appliances for Machinery Spaces

110. (1) Where appropriate, a sufficient number of automatic dispersion type fire extinguishers or any other type of fire extinguishers deemed appropriate by the Competent Authority shall be placed in the machinery spaces, taking into account the volume of the space and arrangement of the machinery.

(2) Where the automatic dispersion type fire extinguishers or extinguishing equipment are provided in accordance with paragraph (1), one of the extinguishers required under paragraph (2) of regulation 109, shall not be necessary.

Ventilation systems

111. Means shall be provided for stopping the ventilators and closing the openings in the ventilation system from a location outside the spaces being served.

Means of escape

112. Stairways and ladders leading to and from rooms used by crew members and spaces in which crew members are normally employed, shall be so arranged as to provide ready means of escape to the open deck and from there to the survival craft.

Automatic fire alarm and fire detection systems

113. (1) In fishing vessels above 15 m but less than 24 m in length overall which are of flammable construction, or where in other respects considerable quantities of flammable materials are used in the fitting out of accommodation, service rooms and control rooms, it should be carefully considered whether an automatic fire detection and alarm system shall be installed in these rooms, taking into consideration the size of the rooms, lay-out and location in relation to control rooms, and where relevant, the flame propagation properties of the installed furniture.

(2) Machinery spaces containing propelling machinery shall be provided with suitable alarm and fire detection systems.

Fire hydrants, Fire Hoses and Nozzles

114. (1) Fishing vessels above 15 m but less than 24 m in length overall (LOA) shall be provided with not less than one mechanically-driven fire pump. Depending on the sea area available, the Competent Authority may also require an emergency fire pump.

(2) Where more than one hydrant is required to provide on board the vessel the number of jets required under paragraph (3), a fire main shall be provided.

(3) Fire hydrants shall be positioned in such a way that they allow easy and rapid connection of fire hose and at least one water jet can be directed towards any part of the vessel, which is normally accessible during navigation.

PART VI

PROTECTION OF THE CREW

General Protective Measures

115. (1) The surface of decks and of flooring in working spaces on board such as machinery spaces, galleys, fish handling and deck equipment operating areas and deck areas at the foot and head of ladders, shall be specially designed and treated to minimize the possibility of those on board from slipping.

(2) Where practicable, an adequate system of lifelines shall be provided, complete with the necessary wires, ropes, shackles, eye bolts and cleats.

(3) All vessels shall be provided with a means of re-boarding after an accidental fall overboard, which shall be permanently attached to the vessel. On single-handed vessels, the means of re-boarding shall be accessible by a person in the water.

(4) On single-handed vessels, the Competent Authority shall where practicable, require an arrangement to ensure that if the operator falls overboard the engine will stop automatically. Such an arrangement however should not constitute a danger to the operator.

Deck openings and doors

116. (1) Hinged and sliding covers of hatchways, manholes, doors and other openings, shall be prevented from swinging or accidentally closing.

(2) Dimensions of access hatches shall be of an adequate size suitable for the intended purpose.

(3) Having regard to the operation of the vessel and where practicable, suitable protection shall be provided in positions where there is a danger of those on board falling through deck openings.

(4) Handholds shall be provided above the level of the deck and over escape openings.

(5) In general, external hatches and doors shall be closed when the vessel is at sea. All openings occasionally required to be kept open during fishing and which may lead to flooding, shall be closed immediately if such danger of filling occurs with subsequent loss of buoyancy and stability.

(6) Moving parts of machinery, winches, line and net haulers, shall be adequately guarded.

Bulwarks, rails and guards

117. (1) On decked vessels, efficient bulwarks or guardrails shall be fitted on all exposed parts of the working deck, on superstructures and on deck erections.

(2) On undecked vessels, the height of the gunwales shall be sufficient to minimise the risk of persons falling overboard.

(3) In every vessel where a fixed bulwark or gunwale is less than 1 m, guardrails shall be fitted up to 1m, provided that where this would interfere with the fishing operations, alternative arrangements may be permitted by the Competent Authority.

118. Clearance below the lowest rail shall not exceed 230 mm and other rails shall not be more than 250 mm apart. The distance between stanchions shall not be more than 1.5 m. Rails and bulwarks shall be free from sharp edges and corners and shall be of adequate strength.

119. Satisfactory means in the form of guard rails or lifelines shall be provided for the protection of the crew members in getting to and from their quarters, machinery spaces and other working spaces. Storm rails shall be fitted on the outside of all deckhouses and casings.

120. (1) Where equipment is normally incorporated in the structure of a bulwark or rail within the minimum height prescribed for the bulwark or mounted between stanchions of a guard rail, provision shall be made to protect the area when the equipment is not in place.

(2) Where part of a bulwark or guard rail has to be removed for the purpose of the fishing operation, protection for the crew members shall be provided at the opening.

Stairways and ladders

121. (1) For ensuring the safety of the crew members, stairways and ladders shall be of adequate size and strength with handrails and anti-slip treads, to the satisfaction of the Competent Authority.

(2) Emergency ladders in machinery space shall be of steel not less than 450 mm wide.

(3) Accommodation ladders shall be provided with hooks or other suitable fastenings for adequate support and securing against displacement or slipping and be able to be adjusted to the height of the landing place.

Safe Access

122. Wherever necessary and to the extent practicable adequate means shall be provided to ensure safety and convenient access to the vessel where facilities are not provided in the port. Such means shall be of safe construction and adequate strength, be well illuminated and where practicable, have anti-skid surfaces.

Cooking facilities

123. (1) Cooking facilities shall be provided with guard rails and hand rails.

(2) Cooking stoves shall be fitted with guards to retain cooking utensils.

Deck machinery, tackle and lifting gear

124. (1) All winches and hauling equipment for fishing gear shall be fitted with self activated emergency stop safety devices in order to ensure an automatic stop, if a person is pulled towards a winch or other hauling equipment.

(2) Controls of winches, line and net hauling equipment shall be placed in such a manner, that winch operators shall have ample room for their unimpeded operation and have as unobstructed a view as possible of the working area. Control handles shall be provided where necessary with a suitable locking device in the stop or neutral position, to prevent accidental movements, displacement or unauthorized use.

(3) Winches, line haulers and lifting gear shall comply with the requirements contained in the Instruction Manual.

Lighting in working spaces and areas

125. (1) All passageways, working spaces and working areas on board the vessel shall be well lit. The quality and intensity of the lighting shall be sufficient to ensure that the work can be carried out having regard to health and safety of crew members and all those travelling on board.

(2) The amount of light should be sufficient to distinguish details and should create suitable contrast conditions and shall not glare.

(3) Fish holds shall be provided with adequate lighting ensuring lighting in all conditions, both for orientation and during work in the hold.

(4) The lighting shall not interfere with the keeping of a proper lookout and where practicable, provision shall be made for some form of emergency lighting.

Ventilation in working spaces

126. Ventilation in enclosed working spaces shall be in accordance with the provisions of regulation 111, and due consideration shall be given to providing ventilation for the protection of all those on board entering fish holds and other spaces.

Medical services

127. (1) Medical supplies, equipment and instructions shall be provided in all vessels as specified in the Instruction Manual.

(2) Where the operating area of the vessel changes, the medical supplies carried shall be reviewed.

Miscellaneous

128. (1) Protective clothing and safety working equipment as specified in the Instruction Manual shall be provided to the crew members, appropriate to prevent injury or illness being caused to them.

(2) Clothing worn by crew members working on deck shall be capable of supporting the wearer in the water, in the event of being washed overboard. A personal flotation device or a self-inflating working lifejacket may be used for this purpose.

129. All reasonable steps shall be taken to minimize harmful noise and vibration.

130. (1)The Competent Authority shall ensure that crew members are made aware of the health hazards in connection with the carriage of fish in bulk and the depletion of oxygen in the hold, and shall advise them concerning safe working practices in this regard.

(2) The Competent Authority shall ensure that crew members joining a vessel are made aware by the skipper of the particular hazards of the working of the vessel.

131. Arrangement of fish processing equipment shall ensure free access for inspection, operation and cleaning of the equipment and where applicable be suitably guarded. In vessels above 15 m but not less than 24 m in length overall (LOA), the fish processing equipment shall comply with the requirements contained in the Instruction Manual.

132. (1) Where practicable:-

(a) all work stations on deck shall be visible from the wheelhouse;

(b) enclosed working spaces shall be provided with an adequate system of heating and/or a supply of fresh air; and

(c) any deck obstructions and head height obstructions that are a hazard, shall be painted with a bright, conspicuous colour.

(2) In vessels without an enclosed working space, a shelter which does not affect the stability of the vessel made of tarpaulin or a similar material shall be provided where practicable, to protect crew members from excessive exposure to sun and weather. The shelter may also be used to collect rainwater or as an emergency sail.

Dangerous areas

133. (1) A notice shall be posted below radar and radio aerials warning that no work shall be undertaken in the vicinity without authorization. A notice shall also be posted at the operating controls of radar and radio equipment, warning the operator that the equipment shall not be started unless it is clear, that no one is working near the antennas.

(2) Any working area which is designated by the skipper as dangerous or requiring extra care, shall be brought to the attention of the crew members at regular briefing sessions on safety and to each new crew member on joining the vessel.

PART VII

LIFE SAVING APPLIANCES

A – GENERAL

Definitions

134. For the purpose of this Part:-

"*buoyant apparatus"* means, flotation equipment (other than lifeboats, life rafts, life buoys and life-jackets) designed to support a specified number of persons who are in the water and of such construction that it retains its shape and properties;

"*launching appliance or arrangement"* means the mode used for transferring a survival craft from its stowed position safely to the water;

"*novel life-saving appliance or arrangement"* means is a life-saving appliance or an arrangement which embodies new feature not fully covered by the provisions of this Part, but which provides an equal or higher standard of safety;

"*personal flotation device"* means flotation equipment designed to keep a person afloat and which does not hinder a person's ability to work while wearing it;

"*retro-reflective material"* means a material which reflects in the opposite direction a beam of light directed at it; and

"survival craft" means a craft capable of sustaining the lives of persons in distress, from the time of abandoning the vessel.

Evaluation, testing and approval of life-saving appliance and arrangements

135. (1) Except as provided for in the Instruction Manual, life-saving appliances and arrangements to which this Part refers to, shall be approved by the Competent Authority.

(2) The Competent Authority shall have procedures for the approval of life saving appliances and novel life-saving appliances and their arrangements. These procedures shall also include the conditions whereby approval would continue or would be withdrawn.

Production tests

136. The Competent Authority shall require proof that life-saving appliances have been subjected to such production tests as are necessary to ensure that the life-saving appliances are manufactured to the same standard as the approved prototype.

B – VESSEL REQUIREMENT

Number and types of survival craft

137. (1) Every vessel shall be provided with not less than one life raft or buoyant apparatus, unless the vessel complies with the requirements for built-in buoyancy referred to in regulation 49, having the capacity to accommodate the total number of persons on board.

(2) The Competent Authority may taking into consideration the vessel's navigational area, conditions of operation and the size of the vessel, permit vessels to carry other types of survival craft of a type and number. Such survival craft may be of rigid or semi-rigid construction. The Competent Authority shall consider the local meteorological conditions and area of operations and may require a life raft or buoyant apparatus to be carried on any vessel.

Availability and stowage of survival craft

138. A survival craft shall be :-

(a) readily available in case of emergency;
(b) capable of being launched safely and rapidly; and
(c) so stowed as to ensure that :-

(i) the marshalling of persons and their prompt handling is not be impeded;
(ii) embarkation can be effected rapidly and in good order; and
(iii) operation of any other survival craft is not interfered with.

139. (1) A survival craft and launching appliances, if fitted, shall be in working order and be available for immediate use before the vessel leaves port and be so kept at all times when at sea.

(2) Lashings if used, shall be fitted with an automatic release system of an approved type.

140. The Competent Authority, where he is satisfied that the constructional features of the vessel and fishing operations render it unreasonable and impractical to apply the provisions of regulations 138 and 139, may permit non-compliance of those provisions, provided that the vessel is fitted with alternative launching and recovering arrangements adequate for the service intended.

141. All survival crafts shall be marked with the same registration or other identification marks used for the vessel as referred to in regulation 146.

Lifejackets and Personal Flotation Devices

142. (1) A lifejacket of an approved type or a personal flotation device accepted by the Competent Authority shall be carried for each person on board.

(2) Lifejackets shall comply with the requirements contained in the Instruction Manual relating to the testing of lifejackets.

(3) Lifejackets shall be so placed as to be readily accessible and their position shall be clearly indicated.

(4) The Competent Authority shall have the authority to determine whether lifejackets or personal flotation devices or a combination of both, shall be carried onboard.

(5) All lifejacket shall be marked with name of the vessel or its registration number or both.

Lifebuoys

143.(1) Decked vessels above 7m but less than 15m in length overall (LOA), shall be provided with not less than one lifebuoy, which shall be attached to a buoyant line of not less than 18 m in length.

(2) Vessels above 15m but less than 20m in length overall (LOA), shall be provided with not less than two lifebuoys, one of which shall be attached to a buoyant line of not less than 30 m in length.

(3) Vessels above 20m but less than 24m in length overall (LOA), shall be provided with not less than three lifebuoys.

(4) On every vessel carrying more than one lifebuoy, not less than one such lifebuoys shall be provided with self-igniting light.

(5) Not less than one of the lifebuoys provided with self-igniting lights in accordance with paragraph (4), shall be provided with self-activating smoke signals.

(6) Where three lifebuoys are required, at least one lifebuoy on each side of the vessel shall be fitted with a buoyant lifeline of not less than 30m in length. At least one lifebuoy shall not be fitted with a buoyant line. Lifebuoys fitted with buoyant lines shall not have self-igniting lights.

(7) All lifebuoys shall be :-

(a) so placed as to be readily accessible and shall always be capable of being rapidly deployed and not be permanently secured in any way; and

(b) in a bright contrasting colour to the sea and marked with the same registration or other identification marks used for the vessel as referred to in regulation 146.

Distress signals

144. (1) Every vessel shall be provided with means of making effective distress signals by day and by night to the satisfaction of the Competent Authority.

(2) The Competent Authority when considering the amount and types of pyrotechnics carried, consider the area and the nature of the fishing operation. As a minimum, the following pyrotechnics shall be carried :-

(a) four parachute rockets for vessels above 15m but less than 24m length overall (LOA), in and of which two of the rockets may be replaced by hand held flares; and

(b) two hand held flares for vessels of less than 15m in length overall (LOA).

(3) Distress signals shall be of an approved type and shall be correctly stored in a dry place. They shall be so placed as to be readily accessible and their position shall be clearly indicated.

(4) Distress signals which have expired, shall be replaced.

(5) The following additional safety equipment shall also be carried on all vessels:-

(a) whistle;

(b) mirror; and

(c) torch.

Retro-reflective materials on life-saving appliances

145. All survival crafts, lifejackets, personal floatation devices, immersion suits and lifebuoys shall be fitted with retro-reflective material in accordance with instructions issued by the Competent Authority.

Miscellaneous

146. To facilitate aerial rescue operations, wheelhouse tops or other prominent horizontal surfaces shall be painted in a highly visible colour, and shall bear the vessel's registration or other identification marks in letters and/or numerals in contrasting colours to the background. Similar marks on the sides of the wheelhouse would also facilitate search and identification by an aircraft.

147. Marking of fishing vessels for identification shall be in accordance with uniform an internationally recognisable vessel marking system.

148. The Competent Authority shall ensure that crew members receive adequate training and certification in the use and inspection of life-saving appliances and that the skipper regularly inspects all such equipment.

149. (1) There shall be hand rails or similar means, such as a capsize rope which shall be 1.5 times the length of the vessel fitted with a snap shackle or equivalent attachment, to allow persons to hold on to the vessel in the event of a capsize.

(2) Every vessel shall carry adequate means of recovering persons from the water.

(3) Every vessels 15m above m but less than of 24m in length overall (LOA), shall carry not less than one radar transponder, complying with the requirement contained in the Instruction Manual.

PART VIII

EMERGENCY PROCEDURES AND SAFETY TRAINING

Emergency Instructions

150. (1) The Competent Authority shall ensure that all vessels are provided with clear instructions which shall be written where practicable, to be followed by the crew members in case of emergency. These instructions shall be given to a new crew member before sailing on their first trip.

(2) The duties assigned to the crew members may include :-

(a) closing of valves, scuppers, overboard shoots, skylights, portholes and other similar openings in the vessel;

(b) supplying additional equipment to survival craft and other life-saving appliances;

(c) preparation and launching of survival craft;

(d) general preparation of other life-saving appliances;

(e) use of communication equipment; and

(f) fire fighting.

Abandon ship training

151. The Competent Authority shall ensure that the crew members receive on-board training and are certified in the use of the vessel's life-saving appliances, including survival craft equipment. Such training shall be given as soon as possible after a new crew member joins the vessel. The training shall, among others, include the following :-

(a) instructions on operation and use of the vessel's life-saving equipment including the launching of life rafts, the donning of lifejackets, personal flotation devices and immersion suits, and precaution against injury and damage caused by sharp objects;

(b) special instructions necessary for use of the vessel's life-saving appliances in severe weather and sea conditions;

(c) measures for survival when adrift;

(d) precautions against sharks and other fish which are capable of attacking humans; and

(e) landing and survival ashore.

Training in emergency procedures

152. Crews members shall be adequately trained to the satisfaction of the Competent Authority, and be certified in the carrying out of their duties in the event of emergencies.

PART IX

RADIO COMMUNICATIONS

Application

153. (1) Unless otherwise expressly provided for, the provisions of this Part shall apply to vessels engaged on voyages where radio communications or mobile telephone coverage is provided. Where no land based reception is available, vessels shall not operate beyond sight of shore and shall have means of signalling distress in the manner provided for in regulation 144.

(2) The provisions of this Part shall not prevent the use by any vessel or person in distress of any means at its disposal to attract attention, make known its position and obtain help.

Watches

154. Every vessel equipped with a VHF installation shall while at sea, maintain a continuous listening watch on VHF Channel 16.

Sources of energy

155. (1) Where applicable, there shall be available at all times while the vessel is at sea, a supply of electrical energy complying with the relevant requirements of regulation 87 and sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy, for the radio installations.

(2) Where applicable, a reserve source or sources of energy complying with the relevant requirements of regulation 89 shall to the satisfaction of the Competent Authority be provided on every vessel, to supply radio installations for the purpose of conducting distress and safety radio communications, in the event of a failure of the vessels main and emergency source of electrical power. The reserve source of energy shall be capable of simultaneously operating:-

(a) VHF radio installation in sea area A1;

(b) VHF radio installation and the MF or HF or satellite installation in sea area A2;

(c) navigation lights and emergency lighting; and

(d) for a period of not less than three hours.

(3) Where applicable, the reserve source of energy shall be independent of the propulsion machinery of the vessel and the vessels electrical system.

(4) Where a reserve source of energy consists of a rechargeable accumulator battery or batteries, :-

(a) means for automatically charging such battery or batteries shall be capable of recharging them to minimum capacity requirements within ten hours; and

(b) the capacity of the battery or batteries shall be checked using an appropriate method, at intervals not exceeding twelve months.

Performance standards

156. Radio equipment to which this Part applies, (except domestic radio equipment, its ancillary equipment, and mobile telephones) shall be of a type approved by the Competent Authority. Such equipment shall conform to appropriate performance standards as specified in the Instruction Manual.

Maintenance requirements

157. (1) The Competent Authority shall ensure that radio equipment referred to in this Part are maintained to meet the recommended performance standards of such equipment, and that adequate tools and spares are being carried to enable such radio equipment to be maintained as specified in the Instruction Manual.

(2) Satellite Emergency Position Indicating Radio Beacon (EPIRB's) if carried, shall be tested at intervals not exceeding twelve months for all aspects of operational efficiency, with particular emphasis on frequency stability, signal strength, coding and registration. The test shall be performed within three months prior to or after the expiry date or anniversary date.

(3) The EPIRBs shall be subject to maintenance at intervals not exceeding five years and such maintenance shall be performed by approved personnel, preferably at an approved shore based maintenance facility.

Radio personnel

158. Where applicable, vessels shall carry personnel qualified for performing distress and safety radio communications to the satisfaction of the Competent Authority

Alternative Arrangements

159. In lieu of the radio equipment required to be carried on board a vessel under this Part, the Competent Authority may approve a domestic local system of radio communication, provided such equipment are as effective as the equipment referred to in this Part.

160. For the purpose of this Part :-

"continuous watch" means that the radio watch concerned shall not be interrupted other than for brief intervals when the vessel's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks;

"digital selective calling (DSC)" means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International Radio Consultative Committee (CCIR);

"general radio communications" means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio;

"*locating"* means the finding of ships, vessels, aircraft, units or persons in distress;

"*Radio Regulations"* means the Radio Regulations annexed to or regarded as being annexed to the most recent International Telecommunication Convention which is inforce at anytime;

"Sea area A1" means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available;

"Sea area A2" means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available;

"Sea area A3" means an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available;

"Sea area A4" means an area outside sea areas A1, A2 and A3.

Radio records

161. A record shall be kept to the satisfaction of the Competent Authority and as required by the Radio Regulations, of all incidents connected with the radio communication service which appear to be of importance to safety of life at sea.

Radio installations and equipment

162. (1) Every vessel shall be provided with :-

(a) a radio receiver to receive weather forecasting;

(b) VHF Radio installation (which may be a hand–held VHF apparatus) where such vessel is operating in seas area up to 15 Nautical Miles from ashore; and

(c) VHF Radio installation together with a HF/MF (SSB) Radio Communication unit, where such vessel is operating in sea area beyond 15 Nautical Miles from ashore.

PART X

NAVIGATIONAL EQUIPMENT

Navigational Equipment

163. (1) All vessels shall be fitted with a standard magnetic compass except as provided for in this regulation, and such compass shall be properly adjusted and its table or curve of residual deviations shall be available at all times.

(2) Where the Competent Authority considers it unreasonable or unnecessary to require a standard magnetic compass to be fitted, he may exempt individual vessels or classes of vessels from such requirement, if the nature of the voyage, the vessel's proximity to land or the type of vessel does not warrant a standard compass, provided that in all such instances a suitable steering compass is carried.

(3) It should be possible to read the compass by day and by night from the steering position. Where applicable, securing devices for the compass and compensators shall be made of nonmagnetic materials.

(4) Fixed compasses shall be sited as near the fore-and-aft line of the vessel as practicable, with the lubber line parallel with the fore-and-aft line as accurately as possible

(5) All vessels operating in the seas beyond 15 Nautical Miles from shore shall be equipped with GPS/Satellite Navigation System. In vessels equipped with an auto-pilot system actuated by a magnetic sensor which does not indicate the vessel’s heading, suitable means shall be provided to show this information.

(6) Decked vessels shall to the satisfaction of the Competent Authority, be provided with suitable means for determining the depth of water under the vessel. Where fish-finding devices are fitted, they could be used for this purpose.

(7) Every vessel shall be equipped with a radar reflector complying with the specifications contained in the Instruction Manual.

(8) All equipment fitted in compliance with the requirements of this regulation, shall be to the satisfaction of the Competent Authority.

Nautical instruments and publications

164. (1) Where applicable, suitable nautical instruments, adequate and up-to-date charts and all other nautical publications necessary for the intended voyage, shall be carried onboard to the satisfaction of the Competent Authority.

(2) An Electronic Chart Display and Information System (ECDIS) or electronic chart plotter, may be accepted as meeting the chart carriage requirements specified in paragraph (1) and adequate back-up arrangements shall be provided for, to meet their functional requirements.

Signalling equipment

165. (1) Every vessel shall carry all equipment necessary to comply in every respect with the requirements of the International Regulations for Preventing Collisions at Sea, 1972, as specified in the Instruction Manual.

(2) Lights, shapes and flags shall be provided to indicate that the vessel is engaged in any specific operation, where such signals are required to be used.

(3) All vessels which are required to carry radio installations shall carry the table of life-saving signals contained in the International Code of Signals, as specified in the Instruction Manual.

(4) All vessels shall carry a table of distress signals as specified in the Instruction Manual.

Navigating bridge visibility

166. Power-driven vessels shall meet the following requirements :-

(a) the view of the sea surface from the conning position shall extend from right ahead to 22.5° abaft the beam on either side of the vessel. Blind sectors caused by any obstruction outside the wheelhouse, shall be kept as small as possible; and

(b) from each side of the wheelhouse the horizontal field of vision shall extend over an arc of at least 225º, that is from at least 45º on the opposite bow through right ahead and then from right ahead to right astern, through 180º on the same side of the vessel.

Navigation lights

167. Deck lighting shall not impair the visibility of navigation and signal lights as required by the Convention International Regulations for Preventing Collisions at Sea, ratified on ……..

PART XI

CREW ACCOMMODATION

General

168. The provisions of this Part shall apply only to decked vessels.

169. (1) Accommodation of appropriate size and quality shall be provided on vessels, bearing in mind the length of the voyage, the weather conditions and the size of the vessel.

(2) Location, structure and arrangement of crew accommodation spaces and means of access thereto shall be such as to ensure adequate security, protection against weather, sea, heat, cold, condensation, undue noise, vibration, fumes, odours and effluvia from other spaces. Sleeping rooms shall be placed aft of the collision bulkhead, if fitted.

(3) In the choice of materials used for the construction of accommodation spaces, account shall be taken of properties potentially harmful to the health of persons on board or likely to harbour vermin and mould.

(4) All practical measures shall be taken to protect crew accommodation and furnishings against the invasion of insects and any other pests.

Lighting, heating and ventilation

170. (1) All crew accommodation spaces shall be adequately lit as far as possible by natural light. Such spaces shall also be equipped with adequate artificial light. However methods of lighting shall not endanger the health or safety of the crew members or the safety of the vessel.

(2) Adequate heating facilities shall be provided in crew accommodation spaces as are necessary in accordance with climatic conditions and such facilities shall be designed so as not to endanger health or safety of the crew members or the safety of the vessel.

(3) Accommodation spaces shall be adequately ventilated. Vessels operating in tropical climates shall where practicable, be fitted with a mechanical ventilation system.

(4) The ventilation of galleys and sanitary spaces shall be to the open air and unless fitted with a mechanical ventilation system, be independent from the mechanical ventilation system provided for crew accommodation.

Sleeping spaces

171. (1) Sleeping spaces shall be so planned and equipped as to ensure reasonable comfort for the occupants and to facilitate tidiness.

(2) Each crew member shall be provided with a berth. Where, having regard to the size, type or the intended service of the vessel and the sleeping spaces available, it is not

practicable to provide each crew member with a berth, the number of berths to be provided shall not be less than half the number of crew members onboard.

(3) The minimum size of each berth shall not be less than 1.9 m in length and 600 mm in breadth.

(4) Suitable bedding shall be provided for each crew member and mattresses provided shall not be of a type that is liable to develop toxic fumes in cases of fire, nor be of a type that will attract pests or insects. All mattresses shall be provided with a cover made of fire retardant material.

(5) Wherever reasonable and practicable having regard to the size, type or intended service of the vessel, the furnishing of sleeping spaces shall include both a fitted cupboard preferably with an integral lock and a drawer for each occupant.

(6) Berths shall wherever possible be not placed side by side in such a way that access to one berth can be obtained only over another. Berths shall not normally be arranged in tiers of more than two, with the lower berth in a double tier not being less than 300 mm above the deck. The upper berth shall be paced approximately midway between the bottom of the lower berth and the lower side of the deck head beams.

(7) Where the upper berth in a tier overlaps a lower berth, the underside of the upper berth shall be fitted with a dust proof bottom of wood, canvas or other material.

Eating spaces and cooking facilities

172. (1) Wherever reasonable and practicable, eating spaces and cooking facilities shall be arranged separate from sleeping spaces.

(2) Cooking facilities shall be of adequate dimensions for the purpose and have sufficient storage space and satisfactory drainage. Wherever possible, refrigerators or other low-temperature storage facilities shall be provided to the satisfaction of the Competent Authority.

(3) Cooking facility provided shall contain adequate cooking utensils, an adequate number of cupboards, shelves, sinks and dish racks made out of rustproof material and with satisfactory drainage.

(4) The cooking facilities provided shall include suitable facilities for the preparation of hot drinks for the crew members at all times.

(5) Cooking appliances shall be fitted with fail-safe devices in the event of any failure of the power source or fuel. Supplies of fuel in the form of gas or oil, shall not be stored in the cooking facility provided.

Sanitary facilities

173. (1) Having regard to the intended service of the vessel, sufficient sanitary facilities including toilets and washing facilities, shall be provided to the satisfaction of the Competent Authority. Wherever practicable such facilities shall include the following:-

(a) one shower-bath for every eight persons or less;

(b) one water-closet or suitable alternative for every eight person or less; and

(c) one wash-basin for every six persons or less.

(2) Soil and waste discharge pipes shall not pass through fresh water or drinking water tanks or where practicable, provision stores. Neither shall they where practicable, pass overhead of eating spaces or sleeping spaces. Such pipes shall be fitted with anti-siphon closures.

(3) In general, toilets shall be situated convenient to but separate from sleeping spaces, eating spaces and wash rooms.

(4) The deck area of wash places shall have a covering of durable material, easy to be cleaned, impervious to damp and properly drained. The deck covering shall be carried up the sides of the compartment to a height of not less than 0.2 m and be adequately sealed at all joints to prevent the ingress of water and damp.

Water facilities

174. (1) Filling, storage and distribution arrangements for drinking water shall be so designed as to preclude any possibility of water contamination. Tanks shall be designed to allow internal cleaning.

(2) In every vessel, a dedicated supply of not less than 2.5 litres of drinking water per person per day shall be provided for drinking and cooking purposes.

(3) Where the washing facilities use salt water, an additional 12 litres of fresh water shall be carried to allow the crew members to rinse themselves.

PART XII

MISCELLANEOUS

Instruction Manual

175. (1) The vessels to which these Regulations are applicable, shall be subject to and be required to comply with all the requirements, specifications and standards pertaining to their construction and other related matters, contained in the Instruction Manual maintained by the Competent Authority for that purpose, and such Instruction Manual shall constitute on integral part of these Regulations.

(2) Where under these Regulations the Competent Authority is empowered to evaluate, administer or give effect to certain provisions of these Regulation to his satisfaction or at his discretion or where the Competent Authority is authorized to permit a deviation from a strict compliance with certain requirements imposed by these Regulations, such authority or power shall be exercised in accordance with the guidelines specified for the same in the Instruction Manual.

Inspection of vessels

176. The hull, machinery, equipment, radio installations, and crew accommodation of every vessel shall be so constructed and installed as to be capable of being regularly maintained to ensure that they are at all times and in all respects, satisfactory for the vessel's intended service.

Surveys

177. (1) The Competent Authority shall arrange for a Surveyor to carry out appropriate inspections of every vessel during its construction and at regular intervals thereafter, in order to ensure that the vessel's hull, machinery, equipment and crew accommodation are constructed and maintained in the manner provided for by these Regulations and the requirements, specifications and standards contained in the Instruction Manual.

(2) Where an inspection has been carried out by a Surveyor under paragraph (1) of this regulation, no change shall be made in the structural arrangements, machinery, equipment and crew accommodation covered by the such inspection, without obtaining the prior approval of the Competent Authority.

Equivalent

178. Notwithstanding the provisions of these Regulations, where a particular fitting, material, appliance or apparatus, or type thereof, is required to be fitted or carried in a vessel, or any particular arrangement is required to be made, the Competent Authority may permit any other fitting, material, appliance or apparatus, or type thereof to be fitted or carried, or any other arrangement to be made in that vessel, if he is satisfied by trial thereof or otherwise, that such fitting, material, appliance or apparatus, or type thereof or arrangement, as the case may be, is as effective as that which is required under the provisions of these Regulations.

Definitions

179. For the purposes of these Regulations, unless the context otherwise requires:-

"amidships" means the mid-length of length overall (LOC);

"approved" means approved by the Competent Authority;

"*base line"* means the horizontal line intersecting at amidship the keel line;

"*bow height"* means the vertical distance at the forward perpendicular between the waterline corresponding to the maximum permissible draught and the designed trim and the top of the exposed deck at side;

"*breadth" (B)* means the maximum breadth of a vessel, measured at maximum beam to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull, in a vessel with a shell of any other material;

"*collision bulkhead"* means a watertight bulkhead up to the working deck in the fore part of the vessel, as approved by the Competent Authority;

"crew member" means the skipper and all other persons employed or engaged in any capacity on board a vessel in performing any duty connected with the business of that vessel;

"*deck erection"* means any decked structure on the working deck;

"*decked vessel"* means a vessel having a fixed structural deck covering the entire hull above the deepest operating waterline. Where open wells or cockpits are fitted in this deck the vessel is considered a decked vessel if flooding of the well or cockpit will not endanger the vessel;

"*deepest operating waterline"* means the waterline related to the maximum permissible operating draft;

"*depth" (D)* means the moulded depth amidships;

"*fishing boat"* shall have the same meaning as given to that phrase in the Fisheries and Aquatic Resources Act, No. 2 of 1996;

"*enclosed superstructure"* means a superstructure with :-

(a) enclosing bulkheads of efficient construction;

(b) access openings if any, in those bulkheads fitted with permanently attached weathertight doors, of a strength equivalent to the intact structure which can be operated from each side; and

(c) other openings in sides or ends of the superstructure, fitted with efficient weathertight means of closing:

Provided a raised quarter-deck is regarded as a superstructure and a bridge or poop shall not be regarded as "enclosed", unless access is provided for the crew members to reach machinery and other working spaces inside those superstructures, by alternative means which are available at all times when bulkhead openings are closed;

"freeboard (f)" means the actual minimum freeboard and consist of the distance from the underside of the working deck at the side to a water-line, measured perpendicularly to the water-line plus the minimum thickness of decking. When the working deck is stepped, the lowest line of the deck and the continuation of that line parallel to the upper part of the deck, shall be taken as the working deck;

"*height of a superstructure or other erection"* means the least vertical distance measured at side from the top of the deck beams of a superstructure or an erection to the top of the working deck beams;

"*Instruction Manual"* is the document containing requirements, specifications and standards pertaining to the construction of vessels, being maintained by the Competent Authority under regulation 175;

"keel line" means the line parallel to the slope of the keel passing amidships through:-

(a) the top of the keel or line of intersection of the inside of shell plating with the keel, where a bar keel extends above that line of a vessel with a metal shell or the rabbet lower line of the keel, of a vessel with a shell of wood or a composite material; or

(b) the intersection of a fair extension of the outside of the shell contour at the bottom, with the centreline of a vessel with a shell of material, other than wood and metal;

"last depth" means the depth measured from the keel line to the top of the working deck beam at side. Where the working deck is stepped and the raised part of the deck extends over the point at which the least depth is to be determined, the least depth shall be measured to a line of reference extending from the lower part of the deck, along a line parallel with the raised part;

"length (L)" shall be taken as 96% of the total length on a waterline at 85% of the least depth, or as the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In vessels designed with rake of keel, the waterline on which this length is measured shall be parallel to the designed waterline;

"length overall (LOA)" is the length of the vessel in a straight line parallel to the design waterline, from the foremost part of the stem at the height of the deck or gunwale, to the after most part of the stern;

"machinery spaces" are those spaces which contain internal combustion type machinery used for main propulsion, generating electricity, compressor units and machine driven pumps etc;

"*new vessel"* is a vessel the keel of which is laid or which is at a similar stage of construction, on or after the date of adoption of these Regulations;

"*owner"* means any person or entity having assumed the responsibility for the operation of a vessel;

"Radio Regulations" means the Radio Regulations issued by the International Telecommunications Union;

"*skipper"* means the person having the command of a vessel;

Sri Lanka waters shall have the same meaning as given to that phrase in the Fisheries and Aquatic Resources Act, No. 2 of 1996;

"*steel or other equivalent material"* means steel or any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure, to the standard fires test (e.g. aluminium alloy with appropriate insulation);

"*superstructure deck"* means the complete or partial deck forming the top of a deck erection situated at a height of not less than 1.8 m above the working deck. Where this height is less than 1.8 m, the top of such deck erections shall be treated in the same way as the working deck;

"*undecked vessel"* means a vessel which is not a decked vessel;

"vessel" means a fishing boat which belongs to the type of vessel referred to in paragraph (1) of regulation 2;

"*watertight"* means being capable of preventing the passage of water through the structure in any direction, under a head of water for which the surrounding structure is designed;

"w*eathertight"* means that sea condition in which water will not penetrate into the vessel; and

"*working deck"* means the lowest complete deck above the deepest operating waterline from which fishing is undertaken. In vessels fitted with two or more complete decks, the Competent Authority may accept a lower deck as a working deck, provided that that deck is situated above the deepest operating waterline.

Measurements

180. In these Regulations, measurements are given in the metric system using the following abbreviations:-

m - metre

cm - centimetre

mm - millimetre

t - tonne (1,000 kg)

kg - kilogram

º C - degree Celsius

N - Newton

kW – Kilowatt

ANNEX 4 -EQUIPMENT AND MATERIALS FOR THE MFAR CERTIFICATION UNIT"

Item	Units	Technical Specifications
OFFICE EQUIPMENT		
Cupboard with rack + padlock	1	33"x78"x16" with rack + padlock
Cupboard with rack	3	33"x78"x16" with rack
Cupboard	2	33"x48"x16"
Shelf	5	33"x78"x16" (cm 83x198x40)
Meeting table	1	Table for 6-8 people
Computer chairs	16	
Water Dispenser	2	
ELECTRONIC OFFICE EQUIPMENT		
Desktop computer	12	
Laptop computer	1	
Multimedia projector	1	
Digital camera	1	8.2 Mega pixel AF S.L.R. Camera with EFS 18-55mm Zoom Lens & Camera Body (Model EOS 30D Lens Kit + Body)
USB Storage Pen	1	1GB
Printer		Laser
Mobile phone	5	
TECHNICAL EQUIPMENT		
Moisture meter "Tramex Skipper"	15	For measuring relative moisture content in fibreglass and polyester laminates. **Measuring method:** non destructive signal resistance. **Measurement frequency:** 31 KHZ. **Electrodes:** co-planar conductive rubber. **Three scales of sensitivity** to allow moisture detection on salt or fresh water.
Barcol meter	15	Impressor to measure the stage of curing in a **polyester laminate**. **Weight:** 1 lb. 2 oz. **Approximate range:** 25 to 150 Brinell (10 mm ball 500 kg load).

Ultra sound laminate thickness measurer	3	**Cygnus SE**. Used to measure laminate thickness without needing to have access to the other side. Also useful to detect air voids and delaminations. **Materials:** sound velocities between 1000 m/s and 9995 m/s. **Range:** 0.9 mm - 750 mm depending on the material under test **Accuracy:** ± 0.1 mm ± 0.05 mm **Resolution:** 0.1 mm 0.05 mm **Probes:** single crystal hard face compression remote probe. **Power:** 2xAA alkaline batteries. **Display:** Large clear LCD display with switchable backlight. **Size:** 150mm x 33mm x 82mm. **Weight:** 295gms.
Hygrometer	15	For measuring the relative moisture content in the air. Very useful and important for keeping control of the working conditions. **Temperature range:** 14 to 122°F (-10 to 50°). **Humidity range:** 10 to 99% RH. **Temperature accuracy:** ±1.8°F (±1°C). **Humidity accuracy:** ±5%RH. **Temperature resolution:** 0.1°. **Humidity resolution:** 1%.
TRANSPORT EQUIPMENT		
Vehicle	1	4x4 vehicle
Vehicle	2	2x4 station wagons

ANNEX 5
TRAINING FOR THE STAFF OF THE MFAR CERTIFICATION UNIT

List of participants:

1. Mr. WKSJ Bandara- Marine Engineering
2. Mr.WBPR.Perera- Marine Engineering Assistant
3. Mr. YALPK.Jayasinghe-Marine Engineering Assistant.
4. Mr. P.Parameshwaram, Marine Engineering Assistant-
5. Mr. LDA.Udayakantha-Marine Engineering Assistant-
6. Mr. V.Sridharan-Marine Engineering Assistant
7. Mr.US.Ediriweera-Marine Engineering Assistant.
8. Mr. Sajith Prasad Chaminda-Physical Science Graduate-Technical Asst.(Fishing Gear)
9. Mr. Nihal Silva.-Physical Science Graduate- Fisheries Resources Management Assistant(F.R.M.A.)
10. Mr.AP.Ratnapala-Physical Science Graduate-F.R.M.A.
11. Ms.T.Thayalinie- Physical Science Graduate, F.R.M.A Ms.MMPDS.Jayatilake. Physical Science Graduate. F.R.M.A.
12. Mr.UR.Wickramarachchi-Fisheries Inspector
13. Mr.N.Wickramasinghe-Fisheries Inspector.
14. Mr.Nandasiri Gamage- Fisheries Inspector.
15. Mr.AP.Laksman -Fisheries Inspector.
16. Mr.KL.Gamini Fisheries Inspector
17. Mr.SP.Wickramarachchi- Fisheries Inspector.

Mr. G.J.D.W.Dayananda, Marine Engineer of DFAR participated as the Coordinator for the program

Resource personnel:

FAO staff:

1. Susantha M. Jayasena,
2. L.P.Dassanayake
3. Captain K.S.Jayasinghe)

External staff:

4. Mr. Ranjith Goonewardhane (Ex. MD/Taos)
5. Mr.P.A. Boteju- CeyNor, Foundation Ltd
6. Dr. W.K.Wimalasiri, Dept. Mechanical Engineering, Moratuwa Univeristy
7. Captain(E) Amal Wijetunga (ex Navy)
8. Mr. Lal de Silva (GL Surveyor), Gernamischer Lloyds
9. Mr.W.D. Nimal Anthony, ex Radio Officer
10. Mr. Godaheve, Sri Lanka Ports Authority, Colombo
11. Mr. D.R. Gunaratne, ex Labour Dept. official
12. Mr.. J.B. Munasingha, ex Colombo Dockyard official
13. Mr. Butantudava, Dept of Computer Science, University of Colombo
14. Mr. Ganeshamoorthy, Asst. Director, Telecom Regulatory Commission

ANNEX 6
EQUIPMENT FOR THE UPGRADE OF BOATYARD FACILITIES

#	Item	Description	No. of items
1	Safety Goggles	Clear, dust proof	400
2	Respirator	-	400
3	Single Cartridges for Respirator	Disposable	10,000
4	Dust Face Mask	-	600
5	Dust Mask Filters	-	20,000
6	Ear Plugs	Pairs of earplug with cord	600
7	Leather Gloves	-	1,000
8	Chemical Gloves	-	600
9	Disposable Gloves	Silicon - resistant to solvent/acetone	100,000
10	Disposable Face Masks	Paper	20,000
11	Overalls	Cotton	600
12	Safety Shoes	Heavy Duty	200
13	Canvas Shoes	Light Duty	600
14	Shoe Covers	Pairs of shoe covers, paper - disposable	1,000
Safety Equipment Kit for Boatyards (No. of kits = 11)			
#	**Item**	**Description**	
15	Fire Extinguisher	Portable / 5Kg / Dry Powder Type	
16	Fire Extinguisher	Portable / 3.5Kg / CO2 Type	
17	Life Buoy	760mm o.d P.V.C Skinned Polurethane accepted by DTP / Colour Orange / Rot Proof / Synthetic Rope Grabline	
18	Life Jacket	To confirm to Solas 38 Regulation	
19	Vacuum Cleaner	60 liters	
20	First Aid Box with Medicine	To comply with the Ministry of Labour Factories Ordinance n. 45 of 1942 (Pag. 224)	
21	Chronometer	Water resistant	

ANNEX 7
NESED Trainings

The contents of the courses implemented by NESED can be summarized as follows:

a. Entrepreneurial development and alternative income generation.
Course contents include:
- Understanding the business environment.
- Identifying viable business propositions.
- Developing entrepreneurial skills.
- Matching business with competencies, environment and capacities.
- Planning and managing business functions (marketing, production and finance).
- Linking with suppliers, customers and other service providers.

b. Self employment training on how to manage a business
Course contents include:
- Improving existing small-scale businesses.
- Increasing marketing capacities and entrepreneurial skills.
- Developing technical capacities to manage a business.
- Linking with suppliers, customesr and other service providers.

The number of beneficiaries and selected villages are presented in following table:

Training Course	Village	Beneficiaries
Enterprise development and alternative income generation.	Vinayakapuram Panama Sinna Ulla Yodakandiya	10 + 18 21 11 22
Self employment training on how to manage a business	Sinna Ulla Yodakandiya Kalametiya	20 18 30
Total		**150**

ANNEX 8
NUTRITION AND FOOD PREPARATION, TRAINING MATERIALS

Tools	Theme	Language
Poster on food for healthy blood	Importance of micronutrients(iron) for adolescents and pregnant and lactating women.	Tamil(T) Sinhalese(S)& English(E)
Poster on balanced diet	Diet diversity. Expanding food options from locally available sources and encouraging a balanced diet.	Tamil(T) Sinhalese(S)& English(E)
Poster on home-grown crop calendar	Preparing a balanced diet with limited income, promoting home gardens and improved processing and preservation practices.	Tamil(T) Sinhalese(S)& English(E)
Leaflet on iron rich foods	Importance of iron especially for adolescents, pregnant women and lactating mothers	Tamil(T) Sinhalese(S)& English(E)
Leaflet on the conservation of nutrients during food preparations	Importance of micronutrients(iron) for adolescents and pregnant and lactating women.	Tamil(T) Sinhalese(S)& English(E)
Leaflet on the importance of nutrition during pregnancy and lactation	Enhanced nutrition is essential during pregnancy and lactation.	Tamil(T) Sinhalese(S)& English(E)
Leaflet on providing nutritious food during early childhood.	Good nutrition important during early childhood for rapid growth.	Tamil(T) Sinhalese(S)& English(E)
Leaflet promoting a healthy diet among children and adolescents.	Importance of nutritious food for improved health.	Tamil(T) Sinhalese(S)& English(E)
Leaflet on increasing the nutritional intake of the elderly.	Importance of appropriate micro-nutrient intake during aging.	Tamil(T) Sinhalese(S)& English(E)
Recipe booklet	Promoting cereals, vegetables, fruit, pulses and meat based recipes	Tamil(T) Sinhalese(S)& English(E)
Food and nutrients booklets	Promotion of home gardens for improved nutritional well-being	Tamil(T) Sinhalese(S)& English(E)

ANNEX 9
TRAINING SCHEDULE AND TRAINING CONTENTS FOR NIFNE

Training schedule:

NIFNE TRAINING SCHEDULE
TRAINING OF 300 FISHERMEN IN THE DISTRICTS OF AMPARA, HAMBANTOTA AND BATTICALOA
PROJECT OSRO/SRL/505/ITA
AUGUST 2007

Day / District / Training	**Week 1**						
	Mon 13	**Tue 14**	**Wed 15**	**Thu 16**	**Fri 17**	**Sat 18**	**Sun 19**
Hambantota Training 1	travel	X	X				
Hambantota Training 2				X	X	travel	
Ampara Training 1	travel	X	X				
Ampara Training 2				X	X	travel	

Day / District / Training	**Week 2**						
	Mon 20	**Tue 21**	**Wed 22**	**Thu 23**	**Fri 24**	**Sat 25**	**Sun 26**
Hambantota Training 3	travel	X	X				
Hambantota Training 4				X	X	travel	
Ampara Training 3	travel	X	X	travel			
Batticaloa Training 1					X	X	travel

Day / District / Training	**Week 3**						
	Mon 27	**Tue 28**	**Wed 29**	**Thu 30**	**Fri 31**	**Sat 1**	**Sun 2**
Batticaloa Training 2		travel	X	X			
Batticaloa Training 3					X	X	travel

Training contents:

Main subject	Topics
Basic fire fighting	Theory of fire: - Fire triangle - Heat transmitting methods - Chain reaction - Classes of fire - Fire classification - Extinguishing methods Fire prevention: - Safe working practices - Built-in protection Fire direction: - Fire petrol - Auto-detect system Fire fighting appliances: - Fire pump - Types of fire extinguishers - Correct use of fire extinguishers
First aid	What is first aid and its role: - Aim of first aid - Responsibility of providing first aid - Situation assessment - Make the area sale - Diagnosis - Level of consciousness - Principal treatments Basics on the human body: - Bone structure - Respirator system - Digestive system Wounds and bleeding: - Internal and external bleeding - Treatments

	Shock: - Causes of shock - Signs and symptoms - Treatment Burns and sun burns: - Causes - Signs and symptoms - Treatment Bandages: - Dressing - Use of triangular bandage - How and when to apply bandages
Survival at sea and personal safety	Emergencies: - Collision - Stranding - Shifting of weights on board - Engine explosion or fire Evacuation: - Means of survival - Life boats - Inflatable life rafts Dangers for survivors: - Drowning - Hypothermia - Predators (sharks) - Fire of oil on water Minimize heat loss in water: - Help and huddle positions - Crocodile formation - Clothes Communication systems: - Red hand flares - Radios

ANNEX 10 -
DISTRIBUTION LIST FOR MANUAL, VIDEO ON SAFETY AT SEA AND VIDEO ON STABILITY OF VESSELS

(1) Mr. S W Pathirana
Director General
Department of Fisheries & Aquatic Resources
New Secretariat
Maligawatte
Colombo 10

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	1200
Manual on Safety of Fishermen	Tamil	600
Video on Safety for Fishermen	Sinhala	200
Video on Safety for Fishermen	Tamil	200
Video on Stability	Sinhala	200
Video on Stability	Tamil	200

(2) Mr. Gamini Herath
Project Manager
GTZ – Boat-building Project
410/106 Bauddhaloka Mawatha
Colombo 7

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	100
Manual on Safety of Fishermen	Sinhala	150
Manual on Safety of Fishermen	Tamil	150
Video on Safety for Fishermen (VCD)	Sinhala	100
Video on Safety at Sea for Fishermen (VCD)	Tamil	100
Video on Stability (VCD)	Sinhala	100
Video on Stability (VCD)	Tamil	100

(3) Dr. Ivan Amarasinghe
Chairman
National Institute of Fisheries & Nautical Engineering (NIFNE)
15, Crow Island
Mattakkuliya
Colombo 15

For the trainees of the Training Programme on Basic Safety at Sea:

Location of Distribution	Information Product	Medium	No. of Copies
Mr. Weerakoon Assistant Director District Fisheries Office Department of Fisheries & Aquatic Resources Tangalle Tel: 047-2240208	Video on Safety for Fishermen (VCD)	Sinhala	140
	Video on Stability (VCD)	Sinhala	140
	Manual on Safety of Fishermen	Sinhala	160
Mr. Selvarajah Assistant Director District Fisheries Office Department of Fisheries & Aquatic	Video on Safety for Fishermen (VCD)	Tamil	110
	Video on Stability (VCD)	Tamil	110

Resources Kalmunai, Ampara Tel: 067-2229363	Manual on Safety of Fishermen	Tamil	130
Mr. George Assistant Director District Fisheries Office Department of Fisheries & Aquatic Resources Batticaloa Tel: 065-2224472	Video on Safety for Fishermen (VCD)	Tamil	110
	Video on Stability (VCD)	Tamil	110
	Manual on Safety of Fishermen	Tamil	130

To be used in Training Programmes conducted by NIFNE:

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	100
Manual on Safety of Fishermen	Sinhala	165
Manual on Safety of Fishermen	Tamil	130
Manual on Safety of Fishermen	English	15

(4) Capt. Shiran Senanayake
Managing Director
Lanka Academy of Technological Studies (Pvt) Ltd
542, Galle Road
Panadura

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	03
Manual on Safety of Fishermen	Sinhala	53
Manual on Safety of Fishermen	Tamil	53
Video on Safety for Fishermen (VCD)	Sinhala	03
Video on Safety for Fishermen (VCD)	Tamil	03
Video on Stability (VCD)	Sinhala	03
Video on Stability (VCD)	Tamil	03

(5) Capt. Darrel De Silva
Managing Director
CINEC
Millennium Drive
IT Park
Malabe

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	03
Manual on Safety of Fishermen	Sinhala	53
Manual on Safety of Fishermen	Tamil	23
Video on Safety for Fishermen (VCD)	Sinhala	03
Video on Safety for Fishermen (VCD)	Tamil	03
Video on Stability (VCD)	Sinhala	03
Video on Stability (VCD)	Tamil	03

(6) Mr. W G Samarathunge
Managing Director
Sri Lanka Ports Authority
Mahapola Training Institute
507, De La Salle Street
Colombo 15

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	03
Manual on Safety of Fishermen	Sinhala	23
Manual on Safety of Fishermen	Tamil	13
Video on Safety for Fishermen (VCD)	Sinhala	03
Video on Safety for Fishermen (VCD)	Tamil	03
Video on Stability (VCD)	Sinhala	03
Video on Stability (VCD)	Tamil	03

(7) Mr. K Haputantri
Chairman
National Aquatic Resources Research & Development Agency (NARA)
Crow Island
Mattakkuliya
Colombo 15

Information Product	Medium	No. of Copies
Video on Safety for Fishermen & Stability (DVD)	Tri-lingual	05
Manual on Safety of Fishermen	Sinhala	25
Manual on Safety of Fishermen	Tamil	25
Video on Safety for Fishermen (VCD)	Sinhala	05
Video on Safety for Fishermen (VCD)	Tamil	05
Video on Stability (VCD)	Sinhala	05
Video on Stability (VCD)	Tamil	05

(8) The Harbour Manager
Ceylon Fisheries Harbour
Panadura

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(9) The Harbour Manager
Ceylon Fisheries Harbour
Mutwal
Colombo

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Manual on Safety of Fishermen	Tamil	25
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Safety for Fishermen (VCD)	Tamil	25
Video on Stability (VCD)	Sinhala	145
Video on Stability (VCD)	Tamil	25

(10) The Harbour Manager
Ceylon Fisheries Harbour
Valachchenai, Batticaloa

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Tamil	150
Video on Safety for Fishermen (VCD)	Tamil	150
Video on Stability (VCD)	Tamil	150

(11) The Harbour Manager
Ceylon Fisheries Harbour
Cod Bay
Trincomalee

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	50
Manual on Safety of Fishermen	Tamil	125
Video on Safety for Fishermen (VCD)	Sinhala	50
Video on Safety for Fishermen (VCD)	Tamil	125
Video on Stability (VCD)	Sinhala	50
Video on Stability (VCD)	Tamil	125

(12) The Harbour Manager
Ceylon Fisheries Harbour
Beruwala
Kalutara

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(13) The Harbour Manager
Ceylon Fisheries Harbour
Hikkaduwa

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(14) The Harbour Manager
Ceylon Fisheries Harbour
Galle

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(15) The Harbour Manager
Ceylon Fisheries Harbour
Mirissa
Matara

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(16) The Harbour Manager
Ceylon Fisheries Harbour

Puranawella
Matara

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(17) The Harbour Manager
Ceylon Fisheries Harbour
Tangalle

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(18) The Harbour Manager
Ceylon Fisheries Harbour
Kirinda
Tangalle

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

(19) The Harbour Manager
Ceylon Fisheries Harbour
Kudawella
Tangalle

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	Sinhala	145
Video on Safety for Fishermen (VCD)	Sinhala	145
Video on Stability (VCD)	Sinhala	145

20) FAO - HQ

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	English	20

21) FAO - Representation Sri Lanka (Library)

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	English	50

22) Other UN Agencies

Information Product	Medium	No. of Copies
Manual on Safety of Fishermen	English	100

ANNEX 11 List of LoAs and commercial contracts for the livelihood component

#	Status LoAs	Purpose	Location	Date of signature	Duration
	Letter of Agreement				
1	UCODEP	Livelihoods	Hamb - Kalametyia	17-Jun	12 months (Ext of 4 wks)
2	ISCOS	Livelihoods	Hamb - Kahandamodara	28-Jun	10 months (Ext 1 month)
3	GUS	Livelihoods	Hamb - Yodakandyia	27-Jun	9 months
4	ICEI	Livelihoods	Ampara - Vinayak + Peri Ull Kudak	04-May	12 months (Ext of 2 months)
5	RC	Livelihoods	Ampara - Panama + Sinna Ullai	26-Jun	10 months
6	Asia	Livelihoods	Batti - Mankerni + Navalady + Kathankudi	25-Jul	11 months (Ext)
7	Asia 2	Livelihoods	Kalutara - Weragama	03-Nov	6 months (Ext)
8	District Vocational Training Centre Ampara	Vocational Training	Ampara - x ICEI	23-Nov	6 months
9	Janshatki Development Centre Monoragala	Water Harvesting	Ampara - x R&C	05-Dec	4 months (Ext until 31 May)
10	Training NESED	Vocational Training		26-Dec	3 months
11	ISCOS 3	Training Cap Build	Colombo	10-Apr	8 weeks
12	Medical Research Institute	Nutrition Survey	Hambantota		
13	PPDRO	Water Harvesting	Batti - FAO Amirthakali	08-May	8 weeks (Ext until 19 Aug)
14	RC 2	Livelihoods	Ampara - Panama + Sinna Ullai	07-May	3 months (until 12 Aug)
15	GUS 2	Livelihoods	Hamb - Yodakandyia	14-Jun	2 months
16	Sewalanka	Vocational Training		06-Jul	2 months
17	NIFNE	Training Cap Build	Hamb - Amp - Batti	02-Aug	1 month
18	IPID	PRAs			
19	IPID 2	PRAs			
20	STREAM	PRAs			
21	University of Florence	GIS			
22	APSRAC	GIS			
23	ISCOS 2	Livelihoods	Kalutara - Beruwala	04-Jul	4 months (Ext until 31 Jan)

24	UCODEP 2	Livelihoods	Kalutara - Weragama	20-Oct	6 months
25	BDC	Vocational Training	Kalutara - Weragama	11-Sep	4 months (+1 month ext)
26	Marco Ballerini	Video Shooting	Colombo	04-Sep	3 1/2 months
27	Dept. Animal Prod. & Health	Livestock - Poultry	Ampa + Batti - Kudak, Vinayak, Sinna Ul, Panama, Pandir, Amirth, Navalady	09-Jan	3 weeks + Amendment
28	Alisei	Livelihoods	Ampa + Batti - Pandiruppu + Amirtakali	20-Jul	12 months
29	Lanka Water Harvesting Forum	Water Harvesting	Ampara - FAO Pandiruppu	25-Apr	8 weeks (Ext until 25 Jul)
	Commercial Contracts				
30	Ediriweera	Infrastructures	Hamb + Amp - Kahandam Hutchery, Peri Ulli 2 ice storage	11-Apr	20 weeks
31	Sumanasekara Construction	Infrastructures	Kalutara + Galle - Alabadawatta, Balapitiya	04-Jan	20 weeks
32	Eastern Building Construction	Infrastructures	Amp + Batti - Panama Auction Shed, Thiruch ComCentre, Vinayak Fish Process Centre	11-Apr	20 weeks
33	Sumanasekara Construction	Infrastructures	Hamb - Kalametiya Grain Storage House	19-Mar	14 weeks
34	Marco Ballerini 2	Video Shooting		29-Mar	3 months

ANNEX 12-
PROCURED ITEMS FOR THE FRESHWATER HATCHERY STATION

LIST OF EQUIPMENTS

PUMPS & MOTORS	
High speed 5HP Pump (Class "A" insulation, 5HP High Speed Centrifugal, monoblock, 415Volts, 50Hz, Three Phase, A/C Power supply with head range 10/18m at the discharge of 24.6/8.4Lt per seconts, delivery pipe of 100 X 75 mm and preferably stainless steel compeller with rpm of 1500.	1 unit
High Speed 3HP Pump (Class "A" insulation, 3HP High Speed Centrifugal, monoblock, 415Volts, 50Hz, Three Phase, A/C Power supply with head range 10/6 m at the discharge of 14.0/8.6Lt per seconts, delivery pipe of 75 X 60 mm with rpm of 1500.	3 units
Submersible 1HP Pump (Class "A" insulation, 1HP, 220Volts, 50Hz, Single Phase, A/C Power supply with discharge of 12.0/8.0Lt per seconts, delivery pipe of 32 mm with rpm of 1500.	1 unit
Submersible Pump : 0.75HP / 1HP (Highly insulated class "A", 220 Volts, 0.75HP - Horse Power, Maximum Head 2 Mts, Polarty :2, Discharge : 2 Inches, Single Phase, Maximum flow - 223 m3/mt. 50 Hz Frequency with automatic cut - off - float mechanisms)	1 unit
HEATERS	
(Immersion type, Single phase, 220Volts, Non-Corrasive, Titanic Metal 2KWA Heaters with adjustable thermostat)	10 units
AIRCONDITIONERS	
a A convertional model 1.5 tons capacity window air-conditioner with stabilizer of 1K Walt.	1 unit
b Split air-conditioner with automatic thermocontrol and stabilizer. Capacity of air-conditioner 0.5 tons for laboratory.	1 unit
AIR COMPRESSOR - 5 HP (BLOWERS)	
(Twin lobe rotary, aircooled vertical flow with operating pressure of 1.5 - 2.0 m height and capacity of 183 m^3/Hr with rpm of 1000. The suction & discharge diameter 80 mm and suggested with pipeline 80 mm with 5HP motor. A non - returned value is mandatory for each blower.	2 units

LIST OF EQUIPMENTS

MOTOR

Class "A" insulation, Three Phase squirrel Cage induction motor, 415 V I 10%; 50Hz + 5% A/C supply with speed of 1500 rpm, consumption wattage 3.7 KW/Hr. Compressor with motor covered by cage in order to avoid accidents and DOL starters to be fixed in the panal board.	2 units

OTHER EQUIPMENT

Germicidal Lamps Ultra Violet 253.7 nanometer, 40 walts, 843 mm, Dia 15 mm, with quarty tubing including jacket holders stabilizers electrical panal board with copper chocks.	16 units (2 X 8 units)
Solenoid Value (for UV) An Electromagnetic value to be connected along with UV lighting system to prevent flow of non-treated water to the unit.	1 unit
PH meter Digital display, Electrode as probe A/C supply, 220 Volts, 50 Hz.	1 unit

MICROSCOPE

Hologen illuminated bulb, binocular microscope with tinted eye piece with stabilizer.	1 unit

FIBRE GLASS TANKS

Flat bottom Grey Colour - 500 Lts.	3 Nos
Flat bottom Black Colour - 1000 Lts.	2 Nos
Conical bottom Black Colour - 300 Lts. With Lid	12 Nos
Syntex round tank with Lid - 500 Lts.	3 units

WORKING CAPITAL FOR ONE CYCLE PRODUCTION

I. CATRIDGE FILTERS

(FRP / Stainless casing with leg Support)	2 units
10 micron candles of 20 inches Washable, Ovenable user friendly	12 units
5 micron candles of 20 inches Washable, Ovenable user friendly	12 units

II. SLOW SAND FILTERS MEDIA

100 mm smooth edge river pebbles 80 mm smooth edge river pebbles	50 Cu. Ft. 50 Cu. Ft.
60 mm smooth edge river pebbles	50 Cu. Ft.
40 mm smooth edge river pebbles	50 Cu. Ft.
20 mm smooth edge river pebbles	75 Cu. Ft.
10 mm smooth edge river pebbles	75 Cu. Ft.

III. SAND

Coarse rever sand	100 Cu. Ft.
Fine rever sand	100 Cu. Ft.

IV. WEIGHING BALANCES

1 a) Electronic digital based battery Operated balance with range of 0 - 225 gms.	1 unit
b) Mechanical balance 0 - 5Kg; Mechanical balance 0 - 500gms	1 unit 1 unit
2 Salinity Refractometer	1 unit
3 Thermometer Mercury filled; Range 0 - 50^0C	3 units
4 Underwater Torchlight (Rechargable, four dry cell; Halogen Buld, Insulated from water media)	1 unit
5 Torch Light - Ordinary, Rechargable	3 units
6 Electric coil stove 1 KW	1 unit
7 Stainless Steel Pressure cooker - 5 Lts	2 units

WORKING CAPITAL FOR ONE CYCLE PRODUCTION

V. ARTIFICIAL FEEDS

OSI brand flakes - (Brown)	5 Kgs
OSI brand Spirulina	5 Kgs
Corn Flakes	2 Kgs
Inve brand XL 300 PL Feed	4 Kgs
Inve brand XL 300 - 500 PL Feed	4 Kgs
Cod Liver Oil	5 Lts
Inve brand Artemia (90% Hatching rate) (Each carton 5.1. Kgs)	12 Cartons
Squid - (Frozen)	15 Kgs
Green Muscle (Frozen)	15 Kgs
Hen's egg	5000 Nos.
Milk Powder	5 Kgs
Yeast Granules	1 Kg.
Cyclopeeze (Frogzen slabs)	10 Kgs

VI. CHEMICAL & MEDICINES

B - Complex Powder	1 Kg
Vitamin C Powder	1 Kg
Orthotoledene	500 ml
Oxytetra Cycline	2 Kgs
EDTA Lab Grade	5 Kgs
Iodine Lab Grade	2 Lts
Liquid bleach (4% chlorine)	2 Lts
Bleaching Powder (34% chlorine) - (5 Kgs x 25 BAGS)	125 Kgs.
Formalin (LR) Grade	5 Lts
Formalin Commercial	30 Lts
Detergent Powder	20 Kgs
Hzdrochloric Acid (LR) Grade	1 Lt
Hzdrochloric Acid (LR) Commercial	30 Lts
Distilled water	300 Lts
TCBS Agar (Vibrio Specific)	500 gms
Potassium Permanganate (Commercial)	1 Kg
Liquid Ammonia (LR)	1 Lt
Silver Nitrate (LR) - (100gms X 2)	200 gms
Magnesium Sulphate (LR)	500 gms
Zinc Sulphate (LR)	500 gms
Sodium Sulphate (LR)	500 gms
Sodium Carbonate (LR)	500 gms
Murix Oride indicator	
Phenolphthalin indicator	
Eric - Chrome T indicator	

WORKING CAPITAL FOR ONE CYCLE PRODUCTION

VI. CHEMICAL & MEDICINES

Potassium Chromate	500 gms
PH tablets	
7.0	1 unit
4.0	1 unit
9.1	1 unit
Wash Bottles	3 units
Tissue rolls	2 units
Rubber cork	12 Nos
Aluminium Foil	3 rolls
Tissue paper rolls	3 rolls
Absolute Alcohol	500 ML
Latex (medicum size) Glove	1 Box
Marker pen	3 Nos

VII. PLASTIC COVERS (Packing Accessories)

Low density polytHzlene bag / tube width 16cm; Lengh 55cm; Thickness : 250 micron	500 Kgs
Rubber Bands - 4 Inches	10 Kgs
Oxygen Cylinders	6 Nos

VIII. FILTER CLOTHS

5 Micron non - ovan, Washable, imported quality	5 Mts
10 Micron non - ovan, Washable, imported quality	10 Mts

IX. MESHES

Polyster imported quality	
100 Micron	5 Mts
200 Micron	5 Mts
300 Micron	5 Mts
500 Micron	5 Mts
700 Micron	5 Mts
1000 Micron	5 Mts
207/220 Micron	5 Mts

X. GLASSWARES

BEAKERS	
1000 ML	3 units
500 ML	5 units
100 ML	5 units
10 ML	5 units
PIPETTES	
10 ML	10 units
5 ML	10 units
2 ML	10 units
1 ML	10 units

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WORKING CAPITAL FOR ONE CYCLE PRODUCTION

X. GLASSWARES

PIPETTE STAND	1 unit
BURETTE STAND	1 unit
BURETTE RANGES	
0 - 50 ML	2 units
0 - 20 ML	2 units
PETRI DISHES	12 units

XI. STAINLESS STEEL SIEVES

300 Micron	2 units
500 Micron	2 units
700 Micron	2 units

XII. FLEXIBLE HOSES

3 Inches	60 Mts
2 Inches	60 Mts
$1^1/_2$ Inches	60 Mts
1 Inch	60 Mts

XIII. PLASTICWARES

Buckets (Heavy Duty) - 12 Lts	12 units
Mugs (Heavy Duty) - 2 Lts	6 units
Round basin - (White Colour only)	
160 mm Diameter	12 units
180 mm Diameter	12 units
60 mm Diameter	12 units
Trash can with Lid (120 Lts, Graduated)	6 units
Tin Cutter	2 units
Nylon rope	
4mm	10 Kgs
8mm	10 Kgs
12mm	10 Kgs
Sponges	24 Nos
Coir brushes	12 Nos

XIV. AERATION MATERIALS

Air tubes (Rolls) - 30 Mts (Size 3/16) each	3000 Mts.
Air Valves / Switches (Size 3/16)	1000 Nos
Air connectors / Joints (-- , + , X , T) - each	300 Nos X 4
Air stones ($1^1/_2$ Inches)	800 Nos
Led weights/Sinkers (50 - 60 gms)	300 Nos.

Annex 14 Timetable of project activities – May 2005 to August 2007.

	Year 1 (2005/2006)												Year 2 (2006/2007)												Extension (2007			
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Preparatory Activities: Implementation of livelihoods analysis in a minimum of 14 villages (5 villages in the district of Hambantota, 5 in the district of Ampara and 4 in the district of Batticaloa)																												
a) Implementation of Incepetion Workshop																												
b) Signature and implementation of LoA with NACA/STREAM																												
c) Signature and implementation of First LoA with IPID																												
d) Signature and implementation of Second LoA with IPID Weerigama																												
e) Preparation of livelihood reports																												
f) Preparation of livelihood report for Weerigama																												
A.1.1 Repair of a minimum of 418 damaged craft																												
a) Signature of Contract with Ceynor																												
b) Implementation of boat repair																												
A.1.2 Repair of a minimum of 81 outboard engines and 228 outboard engines																												
a) Signature of Contract with Suzuki																												
b) Signature of direct agreements with Ceynor																												
c) Signature of contract with Brow motors																												
e) Implementation of inboard engine repair																												
d) Implementation of outboard engines repair																												
A.1.3 Distribution of a minimum of 744 packages of fishing gear and accessories																												
a) Procurrement																												
b) Distribution to beneficiaries																												
A.1.4 Upgrade of boatyards facilities for the construction of FRP, One day and multi-day boats and capacity building of the relevant departments of the Ministry of Fisheries																												
a) Preparation of proposal																												
b) Implementation																												
b.1 Legislation and staffing																												
Preparation of legislation - reformulation by FAO staff																												
Approval from FAO Rome (FI) and Technical Committee																												
Review by national legal adviser																												
Review by legal department - Ministry of Justice																												
Translation in to Sinhala and Tamil																												
Official submission to Minister of Fisheries and parl. approval																												
Review of cadres structure by FAO staff																												
Approval of cadres structure by MFAR																												
Hiring of staff by MFAR																												
b.2 Procurrement of equipment																												
Procurrement of office equipment																												
Procurrement of vehicles																												
Procurrement of measuring instruments + tools																												
b.3 Training (by FAO)																												
Preparation of training materials																												
Implementation of training (MFAR staff)																												
A 1.5 Training on safety ay sea, etc.																												
a) Preparation of agreement with training centre																												
b) Implementation																												
Preparation of training manual for beneficiaries																												
Translation of the training manual in to Sinhala and Tamil																												
Printing of the manual																												
Implementation of beneficiaries training																												
Preparation of educational boards x harbours																												
Preparation of video on boat stability																												
Preparation of video on safety in sea																												
Printing of DVD and VCD copies for beneficiaries and trainees																												
A 1.6 Installation of a minimum of 37 inboard engines for Multi Day and One Day Boats																												
a) Procurrement of the engines																												
b) Distribution / Installation of the engines																												
A. 2.1 Construction of landing facilities and infrastructure for post-harvest and commercialization, including a minimum of 10 fisherman service facilities and 10 auction points																												
a) Preparation of technical specificiations																												
b) Implementation / construction																												
Tendering contract South, 1st batch (2 buildings)																												
Signature contract South, 1st batch (2 buildings)																												
Construction South, 1st batch																												
Tendering contract South, 2nd batch (1 building)																												
Signature contract South, 2nd batch (1 building)																												
Construction South, 2nd batch																												
Tendering contract East (5 buildings)																												
Signature contract East (5 buildings)																												
Construction East (5 buildings)																												
A 2.2 Creation of alternate employments through 4 pilot projects in the fields of aquaculture and other income generation activities																												
a) Definition of project activities, including technical specifications																												
b) Preparation of LoAs with NGOs																												
c) Implementation																												
LoAs with INGOs																												
UCODEP																												

ISCOS			
GUS			
ICEI			
R&C			
R&C 2			
Asia			
Alisei			
ISCOS 2			
ISCOS 3			
UCODEP 2			
Asia 2			
LoAs with local NGOs			
BDC for women empowerment centre x ISCOS			
District Vocational Training Centre Ampara x ICEI			
Janshatki Development Centre Monoragala x R&C			
Commercial Contracts			
Video crew (1)			
Video crew (2)			
Earth Excavation ISCOS			
Earth Excavation ICEI			
A 2.3 Training (various, as applicable)			
Preparation of LoA with NESED			
Signature of LoA with NESED			
Implementation LoA NESED			
Implementation trainings FAO nutritionist			
A 2.4 Construction of new freshwater hatchery station in the district of Hambantota.			
a) Feasibility study and preparation of drawings and BoQ			
b) Construction			
Tendering			
Signature			
Implementation			
Training of NAQDA staff			
A 3.1 Through the application of GIS-based methodology, developm of ICMP for selected communities and improvement of national institutional and human capacity in integrated planning for Coastal Resources Management			
a) Preparation and signature of LoA with APSRAC (India)			
b) Preparation and Signature of LOA with University of Florence (Italy)			
c) Implementation of activities			