Tsunami rehab

Helping hands the crafty way

A project to rebuild fisheries livelihoods in post-tsunami Sri Lanka was implemented with a participatory approach to building fishing vessels

Being an island, Sri Lanka has, over many years, developed fishing, particularly marine fisheries, into an important industry along its coastline of 1,585 km, consisting of sandy beaches, extensive lagoons, estuaries, mangroves, coastal marshes and dunes. In 2003, coastal fisheries contributed almost two per cent to Sri Lanka's gross domestic product. The sector directly employs 300,000 fishermen, and altogether, has provided direct and indirect employment to one million people in the country.

The fishing industry earns foreign exchange for the country. In 2003, it contributed US$100 mn by exporting fish products such as tuna, shrimp, lobster and ornamental fish. Fish accounts for 65 per cent of the total animal protein consumed in Sri Lanka.

Prior to the December 2004 Indian Ocean tsunami, the total fish landings in the country were 280,000 tonnes, of which 90 per cent were consumed domestically, and the rest, exported. However, to meet the increasing domestic fish consumption, 70,000 tonnes of dried and canned fish were imported into the country in 2004.

Statistics show that the largest contribution to fish production comes from the coastal marine fishery (inshore fishery), which is, in fact, a small-scale fishery, whereas the contribution of the offshore fishery (mainly targeting large pelagics) is low (see Table 1).

The small-scale sector accounts for nearly 65 per cent of the total fish production. Twelve fishing harbours and 700 fish-landing centres operate along the coast. Brackishwater aquaculture, mainly for shrimps, contributed 2,400 tonnes in 2004.

The coastal fishing fleet has increased in size since 1984 (see Table 2). The number of fibreglass reinforced plastic (FRP) boats rose from 6,882 in 1984 to 11,559 in 2004, while motorized traditional and beach-seine craft decreased. The offshore fishing fleet has shown the greatest expansion during this period.

Civil strife

Marine fish production increased from 57,457 tonnes in 1960 to 167,412 tonnes in 1980. Civil strife disrupted fishing in the north and east of the country, reducing production to 145,798 tonnes in 1990. The increase in fish production in recent years can be attributed to the rapid development of the offshore fishery, which mainly flourished in the south and west, resulting in 259,680 tonnes and

Table 1: National Fish Production (1985-2004 in tonnes)

		1985	1990	1995	2000	2004
Marine Fisheries	Coastal	140,270	134,130	157,500	175,280	154,470
	Offshore	2,400	11,670	60,000	84,400	98,720
	Total	142,670	145,800	217,500	259,680	253,190
Inland fisheries		32,740	38,190	18,250	36,700	33,180
Total Production		175,410	183,990	235,750	296,380	286,370

Source: MFAR Statistical Unit, 2005

274,760 tonnes in 2000 and 2002, respectively.

The tsunami of 26 December 2004 had a particularly devastating impact on Sri Lanka, which was one of the worst affected areas in the Indian Ocean region. More people died in Sri Lanka as a result of the tsunami than anywhere else, apart from Indonesia. The tsunami caused severe damage to coastal communities in 12 of the 14 coastal districts in the country. Loss of lives and infrastructure hit the fishing sector hard, especially as the ten most affected districts account for over 81 per cent of the country's total marine fish landings. Also, over half the national fish resources are found in the southern and northeastern coastal areas, the ones worst hit by the tsunami.

Damages to the fisheries sector can be mainly categorized thus:

Fishing communities: A total of 4,870 persons were reported dead, while 136 were reported missing. The number of houses of fishers and their families destroyed and damaged has been enumerated as 16,434 and 13,329, respectively.

Fishing vessels: The tsunami rendered around 73 per cent, or close to three-fourths, of the 32,000-strong fishing fleet unseaworthy and totally destroyed about 54 per cent. The cost of repairing and replacing fishing craft and gear has been estimated at US$57 mn.

Harbours and anchorages: Around 10 fisheries harbours, 37 anchorages and 200 fish-landing sites and associated facilities, fishery co-operative buildings and vehicles were extensively damaged. Additionally, marine structures, including breakwater rock boulders, fuel tanks, pumps and distributor systems, slipways and boat repair yards, were damaged. The estimated cost for repair of damage to these facilities is US$65 mn.

Coastal environment, including aquaculture: Since the tsunami waves, on average, penetrated 0.5 km inshore, large tracts of the main agricultural areas were affected. The shoreline was severely disrupted, eroded and covered with debris. Sand and sediment washed from land and deposited in the nearshore area have affected the reef lagoons. In low-lying areas and along creeks and inlets, the waves penetrated up to 2 km from the shoreline. Among the coastal habitats important for fisheries productivity, coral reefs and mangroves seem to have suffered at varying levels as a result of the tsunami. Coral formations, which are habitats and breeding grounds for some fish species, were damaged by debris. Although it can be assumed that the tsunami destroyed breeding and nursery habitats of species such as parrotfish (*Scaridae*), snappers (*Lutjanidae*) and sweet-lips (*Haemulidae*), detailed coral

Table 2: Development Trends of Fishing Vessels in Sri Lanka

Fishing Vessel Type	1984	1990	1995	2000	2004
Non-motorized traditional craft	13,171	14,580	14,649	15,109	15,260
Motorized traditional craft	3,861	973	1,060	1,404	675
FRP boats (20-23 ft)	6,882	9,758	8,564	8,690	11,559
3 ½ tonne boat (28 ft)	2,718	2,364	1,357	1,470	1,493
Offshore multiday boats (34-50 ft)	72	1,639	1,430	1,591	
Beach Seine craft (22-31 ft)	1,261				1,052

Source: MFAR Statistical Unit, 2005

Table 3: Fishing Vessels Destroyed by the Tsunami

Fishing Vessel Type	Destroyed	Damaged	Total
Multiday boats	187	676	863
One-day boats	276	783	1,059
FRP Boats	4,485	3,211	7,696
Traditional craft	11,165	2,435	13,600
Beach-seine craft	818	161	979
Total	**16,931**	**7,266**	**24,197**

Source: Food and Agriculture Organization of the United Nations (FAO) Sri Lanka

Table 4: Estimated Loss in Fish Production, 2005

Estimated Loss in Fish Production 2005	Tonnes
Production Loss Due to Boats Destroyed	86,066
Production Loss Due to Boats Damaged	25,323
Production Loss Due to Gear Lost [1]	6,143
Total	**117,532**

Source: Strategy Document, MFRA, 2005

[1] The assumed loss in production due to lost gear takes into consideration the mean annual catch per unit effort (CPUE) in each boat category for previous years, as provided by the Statistical Unit/MFAR. No adjustment has been made for a possible increase in CPUE at a lower level of fishing effort.

reef damage assessments will be necessary.

Sri Lanka's coastal fishery has a multi-gear and multi-species nature. The fishing vessels include diverse types of traditional and large-scale fishing craft such as the small *theppam* and *kattumaram*, wooden dugout or fibreglass canoes (*oru*), fibreglass day-boats with outboard and inboard engines, and multiday boats with inboard engines.

In addition, cast nets and beach seines are used near the shore. Other types of fishing gear include drift-nets, pole-and-line (for tuna), trammel nets, handlines, longline, purse-seines and push-nets.

Considering this wide variety, the task of replacing lost gear is a complex one that inevitably requires the participation of, and dialogue with, the affected fisher communities. One project that attempted to do so was undertaken by Practical Action, (formerly, ITDG) South Asia. It implemented a participatory approach to rebuilding fishing vessels post-tsunami, encouraging the participation of the fisher communities and district fisheries extension office (DFEO) at all stages—from

beneficiary selection to the completion of the construction of the fishing vessels. The basic aim was to ensure the production of fishing vessels suitable for the local conditions of fish-landing sites.

The participatory approach to building fishing vessels was divided into three steps: (i) selection of beneficiary; (ii) identification of the type of fishing vessel required; and (iii) construction and handing over of the fishing vessel.

To begin with, a list of potential beneficiaries was obtained from the DFEO. This was cross-checked with all the stakeholders in the community, not just the craft owner, but also the full-time and part-time fishworkers (men and women), full- and part-time fishers (men and women), fish processors and so on. Officials like fisheries inspectors, and heads of societies and co-operatives participated in the beneficiary selection meeting too.

Open public meetings were announced through posters and notices. The final beneficiary list, based on a consensus, was submitted through the Fisheries Inspector to the DFEO for approval. Upon receipt of approval, the next stage of identification of the type of fishing vessel required was done. The fisher community was encouraged to come up with the specifications of the required fishing craft. It was noteworthy that the participation of the fisher community was very high in providing information pertaining to the design of the fishing vessel, even, in some cases, drawing the designs on paper.

One successful method employed to identify the craft required was to mobilize the fisher community to collect the damaged parts of the fishing crafts and reassemble them into a dummy of the vessel they had in the pre-tsunami period. This, as well as getting the fisherfolk to draw the designs, were enthusiastically embraced by the community and encouraged the active participation of the fisherfolk in the task of reconstruction and rehabilitation.

Once the formal design was approved by the Marine Engineer of the DFEO, the construction process began with training on fibreglass boatbuilding techniques. Usually, it takes about two-and-a-half to three weeks to build a mould for the fishing craft. After that is completed, the actual building begins. All through the construction period, the community members are encouraged to contribute in kind, in terms of food and refreshments for those building the craft.

Once completed, the fishing vessels are registered under the Ministry of Fisheries and Aquatic Resources (MFAR) through the relevant DFEO. After registration, the vessels are handed over to the selected fisherfolk.

Certain lessons can be drawn from the experience. Evidently, the choice of fishing craft is of paramount importance to fisherfolk. Any design should be based on a thorough analysis of the fishermen's needs, likes and dislikes, which, in turn, reflect the local sea and climatic conditions, the geographical location of a fish-landing site and the type of fishing techniques traditionally practised. The participatory approach to building and repairing fishing craft leads to the production of seaworthy, fishermen-preferred, location-specific fishing craft. This is especially true in a situation where there are no standards for rebuilding in the context of a disaster. Providing unsuitable or unseaworthy fishing craft can lead to a loss of confidence in fishermen to return to the sea for fishing.

On the matter of beneficiary selection, involving all the stakeholders in the community is of considerable importance, because a fisher community is highly stratified, both horizontally (in terms of type of craft owned) and vertically (in terms of nature of employment, whether full-time or part-time, workers, processors or traders and so on).

Giving fishing craft to non-beneficiaries creates an imbalance in the existing structure of power and traditional fishing rights within fisher communities, leading to social conflicts as well as pressure on fish resources.

Social tensions

'Conflict sensitivity' in terms of recognizing and understanding the social

When the right boat made the difference!

In the enthusiasm to help, it is often taken for granted that whatever is being given to the community is what they require. Read on to know why working with the community and taking into consideration their needs is imperative.

As the first rays of sunlight lit the sky near the Panama lagoon landing site, Somasiri, a middle-aged trader of fish and prawns, glanced through his purchase with satisfaction. "I'm happy that life is coming back to normal", mumbled a fellow trader. Somasiri nodded in response. He knew what his friend meant. When the surging waves of the tsunami engulfed their canoes—their only means of livelihood—an eerie silence, intercepted by muffled wails, shrouded the small village. Thankfully, seven months after the tragedy, they were once again able to hear the usual hustle and bustle of fishermen manoeuvering canoes into the lagoon. But these seven months have taught them a lot.

Rebuilding life after having lost everything is indeed an uphill task, as these fishermen realized the hard way. The tsunami brought life to a standstill, as almost all the 40 lagoon canoes owned by the villagers, along with the fishing gear, were destroyed. "Panama is a sparsely developed village of Ampara district, and is largely inhabited by fishing community, who are both lagoon as well as sea fishermen" says Boyagoda, the Panama Fishing Inspector. Around 80 fishermen, and even some women, fish in the huge water body spread across 450 ha, and famed for its shrimp.

Immediately after the tsunami, a relief organization found this group of people and decided to provide them with some lagoon canoes and fishing gear, so that livelihoods could be restored. But as luck would have it, the organization was not able to fulfill the needs of all the fishermen, and only a few could be given the fibreglass canoes. Those who received canoes felt fortunate and immediately resumed fishing. But they soon realized that fishing in those canoes was a risk to their lives because the lagoon was full of 13-ft long crocodiles that could easily capsize the canoes.

To make things worse, the fishermen soon realized that the canoes were more than knee-high, making it difficult for them to cast their nets in the water. Consequently, the initial euphoria of getting a canoe evaporated in thin air. The fishermen had to give up fishing in the lagoon. They also realized that the time-tested specifications of their traditional canoes were best suited for the lagoon.

At this juncture, Practical Action (then ITDG) started its fisheries project activities in Panama and decided to rebuild 40 lagoon canoes destroyed by the tsunami. The team received the list of beneficiaries from the DEFO. Subsequently, it was verified and cross-checked at an open community meeting, ensuring clarity, transparency, better team work and far fewer misunderstandings and conflicts.

Once the beneficiaries were selected, initial discussions were held with the community to understand the type of canoe best suited to the needs and specifications of lagoon fishermen, according to Liyanage, ITDG Project Officer, Fisheries. Enthused by the new approach, the fishermen brought some damaged canoes, which were used by them before tsunami. And, together the most preferred damaged canoe was chosen, which was then repaired by the community under the technical guidance of ITDG staff. "Four fishermen were also trained in the process", adds Liyanage.

The design specifications of the repaired canoe were then sent to the DFEO for the approval of the government marine engineer. Upon approval, the mould of the canoe was produced, based on which all 40 canoes were constructed. Funding was arranged by ITDG, with the community chipping in with labour and food. After three months of hard work, the first few newly constructed canoes were handed over in an opening ceremony.

"It was indeed a win-win situation for all", says Erwin Rathnaweera, ITDG Project Manager, Fisheries. "The whole process of taking the community along, understanding their concerns, and making full use of their experience gave immense confidence to the community. Besides, it was a great learning experience for us too. We realized that in the fisheries rebuilding process, two things are of extreme importance: the appropriate identification of the beneficiaries, and giving or procuring seaworthy boats, or canoes, that the fishing community finds apt."

tensions prevalent between different ethnic groups and fishers (those using illegal and environmentally harmful fishing gear, for instance), needs to be in place before implementing participatory exercises with fisher communities. Lack of such sensitivity can worsen existing conflicts or generate new ones.

Participatory exercises such as the one elaborated here can pave the way for other team-based activities. In Sri Lanka's specific case, community participation in fisheries management, as envisaged in the Fisheries Aquatic Resources Act No.02, 1996, has not had much success due to community and ethnic biases, and social and political pressures. Non-participatory approaches have weakened community-based fisheries management initiatives.

This article is by Erwin Rathnaweera (erwinr@itdg.slt.lk) and Jayantha Gunasekera (jayantha.gunasekera@practicalaction.org) of Practical Action South Asia