



After the tsunami

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FAO’s Agriculture Department has mobilized to assist agricultural reconstruction in areas devastated by the Indian Ocean tsunami on 26 December 2004. The tsunami, which swept over coastlines and islands from Indonesia to the Maldives, and was felt as far away as Somalia, killed at least 290,000 people and disrupted or destroyed the livelihoods of at least one million more. It decimated fishing fleets, inundated crop land with seawater and debris, destroyed irrigation networks, drainage systems, cold storage facilities and food markets, and severely damaged mangroves and wetlands.

In the hours following the catastrophe, FAO — the lead agency for food security in countries where the United Nations is coordinating disaster relief — created a task force to assess the tsunami damage and prepare for rehabilitation. Preliminary findings have helped identify emergency needs, and will lay the groundwork for long-term action to restore fisheries and farming in ravaged coastal and island communities.

Specialist teams. “The devastation has been most serious in northern Sumatra, which was closest to the tsunami epicentre and will need a massive strategic reconstruction plan,” said Daniel Renault, the Agriculture Department’s focal point on the task force. “Region-wide, the most urgent priority is to ensure a good start to the next cropping season, between March and May, in the affected areas. But we also need programmes to restore and improve the livelihoods of rural and fishing communities, to monitor potential health and pollution risks, to reclaim coastal agro-ecosystems and to re-establish local markets. Agricultural reconstruction will be a huge task — we are talking about damage to thousands of kilometres of coast and hundreds of small islands.”

The FAO task force, which meets daily, is assembling specialist teams — composed of experts in fisheries, crop production, animal husbandry, farming systems, and soil and water management — to advise on reconstruction in Indonesia, Sri Lanka and the Maldives.



Given the vast distances involved and the variety of agro-ecosystems found in the damaged areas, the teams will serve primarily as a source of technical expertise for other UN agencies, national staff and NGO relief efforts. “We are drawing on the lessons from past emergencies, existing know-how and our present day-to-day experience in the region to formulate effective strategies to rebuild food security.” says Renault. Among FAO’s first contributions is a framework for reclaiming tsunami-damaged soils, which will be followed by similar guidelines on salt contamination monitoring, agro-bioclimatic data, farming recovery strategies and estimating rehabilitation costs.

Coastal areas hit by the tsunami host a wide range of human activities, from inland rice-based systems and wetlands, to mangrove and coastal strips used primarily for fisheries. As a rough estimate, says Daniel Renault, the length of the affected coastline is 2,000 km in Sumatra and South-east India and 700 to 800 km in Sri Lanka. Of the 40,000 ha of farmland hit by the tsunami in Sumatra, as much as 40% may be unusable for agriculture for years to come, if ever. The devastation is less serious in Sri Lanka and the Maldives, where almost all affected farmland could be reclaimed in time for the April/May cropping season. Overall losses of farm animals have not been as heavy as originally feared, although the situation

in Northern Sumatra remains a major concern — reports speak of 20,000 cattle and buffalo, 20,000 small ruminants and nearly 2.5 million poultry lost.

Saltwater contamination. While well-drained fields probably remained flooded for only a matter of hours, other areas could be under sea water for weeks, resulting in severe saltwater contamination. Another source of salt contamination are sediment deposits that could be as high as 30 cm. Removing layers of sediment is likely to be prohibitively expensive: a layer of just 10 cm would weigh an estimated 1,500 tons per hectare. A more viable option, once rocks and debris have been removed, is to integrate finer salt sediments into the soil profile then leach them out through irrigation — or wait for them to be naturally flushed by monsoon rains. This will be easier in sandy soils near the coast; heavy clay soils further inland may retain salt, hampering agriculture for several seasons.

In rice paddy fields, land levelling and reconstruction of bunds will be necessary wherever the surface profile has been modified by the tsunami. Irrigation systems will need to be replaced or repaired, and open wells used for potable water and irrigation pumped out and disinfected. Clearing blocked drainage channels will help reclaim coastal lagoons and deltas. Over coming months, the lower reaches of watersheds will need additional water allocation and improved management to clean up agricultural lands and coastal ground- and surface water.

For food crop and forage production, the immediate concern is to save harvests wherever possible in the affected areas — in Sri Lanka, for example, the main rice crop is harvested from February to March, and some 25% of the nation's rice-growing areas lie along the coastal belt and associated flood plains.

The challenge beyond that is to restore production capacity for the next cropping season in at least the low- to medium-impacted areas. FAO assessment teams are now working with local agriculture staff to develop a tentative cropping calendar and lists of crops and varieties — mainly rice, maize, beans, sweet potatoes, cassava and vegetables — that will be needed in each country. Where repair of salt-contaminated soil could take too long to complete, salt-tolerant crops or varieties may be the only option.

In many areas, farmers will need seed, tools and other agricultural inputs — for Indonesia alone, FAO has appealed for \$10 million in aid over the next six months to support 50,000 displaced farm families and others affected by the tsunami in Sumatra. Where mechanized farming exists, processing equipment and farm machinery will need replacing or repair. Structures for handling and storage of agricultural products will require restoration, and markets and roads will have to be rebuilt.

Disease threat. Damage assessment reports are awaited on the extent of damage to livestock housing and other infrastructure, and to stored animal feed. It is likely that processing facilities caught in the tsunami have been damaged or destroyed, and pastures, fodder crops and stored animal feed may not be fit for consumption. FAO livestock specialists also warn animal disease outbreaks could be a serious threat, owing to damaged water and sanitation systems and a breakdown in animal disease surveillance. The sudden movement of animals from other regions to replace losses could also favour the spread of diseases. Rehabilitating the livestock sub-sector — through restocking, rebuilding of infrastructure and support to veterinary services — will be an important contribution to restoring farm livelihoods.