



MYANMAR

POST-NARGIS RECOVERY AND REHABILITATION PROGRAMME STRATEGY



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LIST OF ABBREVIATIONS

ASEAN	Association of South-East Nations
CCZM	Comprehensive Coastal Zone Management
CoC	Code of Conduct
DRR	Disaster Risk Reduction
EDRSC	Emergency Disaster Response Sub-Committee
FAO	Food and Agriculture Organization of the United Nations
FAO-RAP	FAO Regional Office for Asia Pacific
GDP	Gross Domestic Product
IASC	Inter Agency Standing Committee
JICA	Japan International Cooperation Agency
NGO	Non-governmental organization
NNDPCC	National Natural Disaster Preparedness Central Committee
PONJA	Post-Nargis Joint Assessment
PONREPP	Post-Nargis Recovery and Preparedness Plan
TCG	Tripartite Core Group
TWG	Technical Working Group
UN	United Nations
UNFPA	United Nations Population Fund
UNOPS	United Nations Office for Project Services
UNOCHA	United Nations Office for Coordination of Humanitarian Assistance
WASH	Water, Sanitation and Health

1. DISASTER IMPACT AND POST-NARGIS CHALLENGES

The risk of natural hazard varies from moderate to high across Myanmar and is characterized essentially by small- and medium-scale but frequent events. Between 1996 and 2005, urban fires constituted about 70 percent of disasters, followed by floods (11 percent), storms (10 percent) and other calamities (9 percent) including earthquakes, tsunamis and landslides. At least 14 major windstorms, 6 earthquakes and 12 major floods struck Myanmar between 1910 and 2000. More recent disasters include the 2004 tsunami, the 2005 landslides in the mountainous region and Cyclone Mala in 2006¹. Cyclone Nargis (2 and 3 May 2008) is by far the most devastating natural disaster in Myanmar's history. It has brought to the fore the extreme vulnerability, particularly of the country's coastal regions, to low-frequency but high-impact natural hazards.

Cyclone Nargis caused severe flooding and shifting of sands, which resulted in extensive damage to lives and livelihoods. An estimated 84 537 people died, 53 836 remain missing (assumed dead) and 33 754 people were injured. Nearly 18 000 fisheries workers died and 10 000 went missing. Assessment data (Post-Nargis Joint Assessment [PONJA], July 2008) reveals that of the estimated population of 7.35 million living in affected townships, some 2.4 million individuals were severely affected. The assessment also indicates that more women and children died than men did, which has distorted social structures.

Approximately 800 000 people were displaced, of whom 260 000 sought shelter in camps and settlements throughout the delta. Recent reports indicate that a significant number of displaced persons are still traumatized. These people also suffered the total loss of their livelihood (land, housing, tools, equipment and other assets) and may not return to their places of origin, depending, at least for the near future, on their host communities. There has been widespread devastation, with the near-total destruction of fields and shelter in areas that were directly hit by the cyclone².

In all, 37 townships were significantly affected in Ayeyarwady and Yangon Divisions, with widespread destruction to homes and critical infrastructure, such as roads, jetties, water and sanitation systems, fuel supplies and electricity.

(i) Damage to the agriculture sector

Major damages and losses in the agriculture sector include the following:

- 783 220 hectares (63 percent) of paddy fields submerged;
- 707 500 tonnes of stored paddy and milled rice destroyed;
- 85 percent of seed stocks lost;
- some 3 000 power tillers and thousands of tilling equipment lost;
- 37 percent of orchard crops and 70 percent of backyard gardening destroyed;
- 227 420 draught animals lost in the 11 most affected townships alone (i.e. 50 percent of buffaloes and 25 percent of cattle);

¹ PONJA *et al.*

² PONJA *et al.*

- nearly 68 000 pigs (28 percent), 503 000 ducks (52 percent), an estimated 7 000 goats (30 percent) and 1.25 million chickens (45 percent) died;
- widespread damage to public and private agricultural infrastructure and buildings;
- approximately 1 550 marine fishing vessels, up to 100 000 small inland fishing boats (50 percent) and 70 percent of fishing gear were lost;
- some 37 000 acres of fish and shrimp ponds were destroyed;
- severe damage to 14 000 hectares of natural mangrove forest (out of 56 000 hectares, already fragile and weakened by years of over-exploitation); and
- serious damage to 21 000 hectares of the 63 000 hectares of redeveloped mangrove plantations.

Table 1: Estimates of damage and losses in the agriculture sector (Kyat million)

Disaster impact on private sector (including households)			
Assets	Damage	Losses	Total
Field crops	65 336	159 929 - 283 000	225 265 - 348 336
Farm equipment	24 046	n/a	24 046
Plantations	22 043	65 209	87 252
Livestock	45 190	30 775	75 965
Capture fisheries	22 609	99 932	125 541
Fish farms	4 120	29 394	33 514
Total	186 344	571 583 - 694 654	571 583 - 694 654

Source: PONJA Team Estimates, July 2008

(ii) Damage to agriculture sector institutions

The Government and the international community have mobilized significant resources to address the immediate needs of populations affected by Cyclone Nargis. The achievements have been notable despite the various logistical constraints and other impediments during the process. International partners faced difficulties and limitations in accessing the affected areas, which also influenced the type and scale of assistance that could be provided.

The agriculture sector is the mainstay of the economy in the cyclone-affected areas. Post-Nargis rehabilitation efforts, particularly in terms of agriculture, require thorough analysis. The institutions that serve and govern the agriculture subsectors (i.e. crops, livestock, fisheries/aquaculture and forestry) need to be rehabilitated. Understanding and restoring institutions and production systems are a prerequisite to rehabilitating livelihoods in a sustainable way with a view to build back better and to improve the resilience of vulnerable populations. Further, Disaster Risk Management (DRM) issues also need to be an integral part of effective and sustainable rehabilitation efforts. This is particularly important in the context of climate change and the specific risks and vulnerability of livelihood systems in Nargis-affected areas.

Such a holistic programme approach, which streamlines DRM and institutional capacity building in rehabilitation plans, would necessitate a multidisciplinary formulation mission. There are indications that fielding such a mission at this stage in the affected areas is feasible as most of the restrictions (logistical, among others) have been relaxed.

Table 2: List of townships affected in Ayeyarwady and Yangon Divisions³

Cyclone Nargis Affected Townships							
Division	Total No. of villages	Most affected townships	Total No. of villages	Moderately affected townships	Total No. of villages	Least affected townships	
Ayeyarwady	498	Bogale					
	385	Dedaye					
	426	Kyaiklat					
	407	Labutta					
	549	Mawlamyinegyun					
	413	Ngapudaw					
	242	Pyapon					
				454	Maubin		
				294	Pathein		
				571	Myaungmya		
			597	Wakema			
Yangon	34	Dala			14	Dawbon	
	81	Dagon Myothit (Seikhan)			56	Dagon Myothit (North & South)	
	132	Khawmu			233	Hlantabin	
	124	Kungyangon			21	Insein	
	18	Seikgyikanaungto			172	Kayan	
	96	Kyauktan			44	Kyeemyindaing	
	37	Hlaingtharya			10	Mayangone	
	278	Twantay			38	North Okkalapa	
					20	Mingalataungnyunt	
					10	Pazundaung	
					29	Shwepyitha	
					38	Thaketa	
					74	Thanlyin	
					78	Thingangkuun	
				177	Thongwa		
				16	Yankin		
Mon State						4 townships (names n/a)	
Total	3 720	15	1 916	4	1 127	20 (including 4 in Mon State)	

Source: FAO Myanmar Database

2. SOCIO-ECONOMIC CONTEXT

The total area of Myanmar is 677 000 km² with a coastline from the mouth of the Naaf River to Kawthaung of approximately 1 930 km and a population of 51.5 million people in 2007⁴. The country is divided into four topographic regions: (i) a mountainous area in the north and west, ranging from about 1 830 to 6 100 metres in altitude, including the Arakan coastal strip between the Arakan Yoma mountain range and the Bay of Bengal; (ii) the Shan Highlands in the east, a deeply dissected plateau averaging 910 metres in height, extending southward into the Tenasserim Yoma, a narrow strip of land that projects some 800 km along the Malay Peninsula, in the

³ Most affected townships represent those in the forefront of the cyclone with devastating losses and damage, identified as “First Priority” for emergency and recovery. Moderately affected with severe damage, identified as “Second Priority”. Least affected with considerable damage, identified as “Third Priority”.

⁴ UNFPA, State of the World Population Report, 2007.

southeast; (iii) central Myanmar, a principal area of cultivation, bounded by the Thanlwin River in the east and the Ayeyarwady River and its tributary, the Chindwin, in the west; and (iv) the fertile delta and lower valley regions of the Ayeyarwady and Sittoung Rivers in the south, covering an area of about 25 900 km², forming one of the world's great rice granaries.

Myanmar's Gross Domestic Product (GDP) per capita in 2007 was estimated at USD 234. Agriculture accounts for 43.7 percent of the GDP, while industry comprises 19.8 percent and services 36.5 percent of the economy. GDP growth in 2006/2007 was driven primarily by high export, particularly of natural gas, good agricultural performance and high capital expenditure. Total export growth in 2007 was 37 percent, with a trade balance estimated at USD 3.3 billion. Record prices for energy exports have led to the steady strengthening of the external balance, and official reserves have grown rapidly. The strong external balance has resulted in relatively stable parallel market exchange rates in the past two years.

Tax revenues as a percentage of GDP have been rising since reforms were undertaken in 2003. However, high expenditure has offset the revenue gain, driven primarily by increases in the salaries of civil servants in 2006 as well as ongoing large capital expenditure.

Table 3: Myanmar GDP growth

Year	GDP in billions of USD PPP	% GDP growth
2003	26.04	12.88
2004	23.59	12.61
2005	21.45	12.62
2006	21.42	2.40
2007	21.28	2.50

Source: Economist Intelligence Unit (EIU), Country Profiles, 2007

With over 10 million people, the Ayeyarwady delta has the highest population density of Myanmar. The extended area is located at the southern end of the central plains with Rakhine State to the northwest, Bago Division to the north, and the Bay of Bengal and the Andaman Sea in the south and east. It is a region with a large number of rivers such as the Ayeyarwady River (2 710 km), the most important river in Myanmar.

The climate is tropical with three distinct seasons: (i) dry and hot from March to May; (ii) rainy from June to October; and (iii) dry and cold from November to February. The annual rainfall varies with the coastal region receiving between 3 500 and 4 000 mm and the northern region between 2 500 and 3 000 mm. As a result of its geographic location and landscape, the Ayeyarwady delta has great economic potential and is considered the rice granary of Myanmar. Other primary crops are maize, sesame, groundnut, sunflower and beans.

Once a 275 000-hectare natural mangrove, forests in the coastal areas have been reduced to 56 000 hectares by 2007, with an additional 63 000 hectares of mangrove forest redeveloped by the Government with the support of international organizations,

such as the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and Japan International Cooperation Agency (JICA). The proximity of the sea and the abundance of rivers make this area a centre for fish and prawn breeding⁵.

The people of the delta are primarily farmers, fishers and labourers, with a smaller proportion engaged in service industries and as traders. Approximately 50 to 60 percent of families in the delta are involved in agriculture. Over time, there has been an intensification of agriculture in the delta region, facilitated by ample water, relatively fertile soils and rich aquatic life.

Increases in production led to the spread of small businesses and traders. Some villagers are also craftsmen, including boat builders and carpenters⁶. Full-time fishing is the primary income source for about 20 percent of Nargis-affected households. Trading contributes approximately 5 percent to overall household income, while Government employment provides for 0.5 percent and assistance/remittances between 6.4 and 12.5 percent (pre- and post-cyclone, respectively).

Twenty-nine percent of the delta population was classified as poor in 2004/2005, as compared with 32 percent nationally. However, the people of the delta are often faced with harsher situations than other regions, especially when crops fail due to droughts, flash floods, strong winds and heavy rains, which limit the population's capacity to maintain long-term food security and achieve further social and economic advances.

This is especially the case as the majority of the delta's population depend on agriculture. Estimates suggest that half of the population in the region is landless, with some 32 percent involved in agriculture as renters/sharecroppers and permanent/seasonal agricultural workers, as compared with the 26 percent national average. Most landless are also engaged in the fisheries subsector, including production and processing. The remainder is involved in other sectors, such as rice mills, salt production, small trade and transportation⁷. Fish processing plants and other small and medium enterprises in the peri-urban areas of delta townships offer sustainable job opportunities for those with the necessary skills.

The landless are more likely to be poor in the delta region than elsewhere. Forty-four percent of the landless lives below the government poverty line, as compared with 33 percent nationally. Of the "poor" in the delta, 31 percent were landless, while the "very poor" were almost always landless (85 percent)⁸. The Government-UNDP Poverty Assessment of 2005 estimated the head count of poverty in the delta at 29 percent. Poverty in the region is particularly high among populations living in the coastal and relatively high-saline content, brackish water environment where farmers can cultivate only one paddy crop per year and yields are much lower than in the rest

⁵ Myanmar Emergency and Rehabilitation Programme, Needs Assessment for the Cyclone Nargis Affected Areas, Agriculture, FAO, June 2008.

⁶ Post-Nargis Joint Assessment (PONJA), UN, ASEAN, Government of the Union of Myanmar, July 2008.

⁷ PONJA *et al.*

⁸ UNDP, Ministry of National Planning and Economic Development, and UNOPS (2007), Integrated Household Living Conditions Survey in Myanmar, Poverty Profile in Ayeyarwady Division (unpublished).

of the delta. A UNDP report of 2006 indicates that the landless poor in this part of the delta makes up as much as 50 to 70 percent of the population⁹.

3. INITIAL RESPONSE TO CYCLONE NARGIS

Emergency response to Cyclone Nargis has been impressive and generous, nationally, regionally and internationally. As part of lessons learned from the Asian Tsunami of 2004, the Government of the Union of Myanmar had already set up a National Natural Disaster Preparedness Central Committee (NNDPCC), chaired by the Prime Minister. Soon after the disaster, ten Emergency Disaster Response Sub-Committees (EDRSCs) were formed to effectively coordinate Government response.

The Government set aside an immediate emergency response package worth Kyat 50 billion (USD 45.45 million). To date, the Government has spent Kyat 70 billion, while a further Kyat 17 billion has been set aside from contributions for additional assistance. The Myanmar armed forces have played an important role in providing logistics, transport and personnel, especially during the rescue and clean up operations.

The Myanmar business community also contributed USD 68.13 million towards emergency and reconstruction activities, while contributions from Myanmar nationals have so far accounted for USD 11.86 million. Of the total national contributions, USD 16.16 million were earmarked for the agriculture sector (including the fisheries and livestock subsectors) to revitalize food production.

Regional support has been equally generous. In addition to financial contributions, the Association of Southeast Asian Nations (ASEAN) stepped in to build a coordinative bridge between the Government and the international community. The Tripartite Core Group (TCG) – made up of representatives of the Government, ASEAN and the United Nations (UN) – has in the meantime become the major vehicle in coordinating national and international efforts to effectively respond to mid-term recovery and rehabilitation needs in the country (Post-Nargis Recovery and Preparedness Plan [PONREPP]).

International contributions in response to the emergency were mainly channelled through the Myanmar Tropical Cyclone Nargis Flash Appeal, coordinated by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). The initial Flash Appeal requested a total donor contribution of approximately USD 187.3 million for the emergency phase (including USD 10 million for the agriculture sector).

In June 2008, 250 staff from the Government, ASEAN, UN agencies and non-governmental organizations (NGOs) carried out the PONJA and presented updated data and background information that led to the presentation of a revised Flash Appeal in July 2008. Revised funding requirements amounted to USD 481.8 million (USD 58.4 million for the agriculture sector) to cover the emergency and early recovery needs of the country for a period of nine months, through April 2009.

⁹ PONREPP Concept Note, Sector: Livelihoods, version 30 October 2008.

At the time the Revised Flash Appeal was issued, the international community had donated USD 178.2 million (including USD 7.4 million for the agriculture sector)¹⁰.

The above figures indicate that while the international community responded generously during the emergency phase, the emergency assistance for the agriculture sector has covered only a small proportion of what is needed. Failure to support the early recovery phase in the agriculture sector will have dire consequences on the country's economy, especially on small- and medium-scale farming households. Inputs must reach target areas by April 2009, prior to start of the rainy season. A reduction in agricultural production and productivity, subsequently, leads to massive losses to the livelihoods of a large number of landless poor, whose way of life depends much on seasonal labour in the sector.

3.1 FAO response

FAO's presence in Myanmar dates back 30 years, working closely with relevant Government departments (Ministry of Agriculture and Irrigation, Ministry of Livestock and Fisheries, and Ministry of Forestry) and supporting farming communities to improve their livelihoods and food security. Within days after Cyclone Nargis struck Myanmar, FAO began providing vital emergency supplies while fielding a technical team of national and international experts, supported by FAO's Regional Office for Asia and the Pacific (RAP) and headquarters, to carry out a comprehensive assessment of the agriculture sector (including crops, fisheries, livestock and forestry).

Based on years of experience in the country, FAO's involvement and leadership in relevant coordination mechanisms – such as the Agriculture Cluster, Early Recovery Cluster and Livelihoods Technical Working Groups (TWG) – have been essential to ensure the effectiveness and quality of the emergency response in the agriculture sector. These efforts have also ensured that the response is in line with accepted international norms and standards and avoids possible gaps between emergency, recovery and rehabilitation processes.

Between June and November 2008, FAO has been involved in the implementation of a series of emergency assistance projects geared towards the immediate rehabilitation of agricultural crops, coastal fisheries and aquaculture, amounting to an approved budget of some USD 12.8 million (with an additional USD 5 million pipelined). FAO has also played an important role in the PONREPP process, especially in the Livelihoods Sector (lead agency) and in the Disaster Risk Reduction (DRR) and Early Recovery Sectors (as co-chair), led by the TCG, tasked with developing a three-year recovery plan for Myanmar.

¹⁰ Myanmar Revised Appeal, Cyclone Nargis Response Plan, Projects, 2008 Consolidated Appeal, July 2008.

Table 4: Summary of FAO emergency assistance (as of January 2009)

Inputs	Quantity	No. of beneficiary households	Beneficiary townships
Rice seed	1 085.6 tonnes	12 924	The 11 most affected townships in Ayeyarwady and Yangon Divisions
Vegetable seeds	117 600 packs	20 400	
Pulses	958 tonnes	26 862	
Fertilizer	1 788.5 tonnes	10 203	
Insecticide	6 tonnes	33 324	
Draught animals (buffaloes and cattle)	1 306	681	
Concentrate animal feed	60 tonnes	652	
Animal health medication and vitamins (antibiotic, ectoparasite, disinfectant, vitamins, etc.)	6 500 vials of antibiotic 60 bottles of ectoparasite treatment 3 000 bottles of disinfectant 3 500 vitamins and minerals 3 500 vials of deworming and ectoparasite treatment	For the treatment of 50 000 animals	
Chicken and ducks	5 500 packages ¹¹	5 500	
Fishing gear	605 sets	605	
Water pumps	340 sets	3 400	
Power tillers	275 sets	5 500	
Fuel and lubricants	76 127 gallons	7 900	

4. FAO RECOVERY STRATEGY

FAO's current strategy was designed on a livelihoods-based approach with the aim to restore, improve and increase the resilience of the livelihoods of the cyclone-affected population in a sustainable manner. In doing so, it is important to take into account that not only the quantity of capital, but also the quality of interaction among people and capital influences the productivity of the outcome.

In practical terms this means:

- human capacities need to be strengthened (vocational training, organizational skills for production and self-help);
- the physical tools of production need to again become available (boats, draught animals, ploughs, tools, seeds, productive land);
- financial capital needs to be available (micro credit, cash-for-work, insurance);
- natural resources need to be sustainably exploited (fisheries, mangrove); and
- social capital – which determines the levels of cooperation, trust and mutual help – must be fully regenerated and deepened so that community-level user groups and producer groups are effective.

¹¹ Chicken packages consist of 10 chickens per package and each duck package comprises of 15 ducks.

With the principle of “building back better”, the agriculture sector recovery strategy over the next three years aims to restore the cyclone-affected population’s livelihoods at a higher qualitative level and at the same time make them more resilient to future shocks. The strategy aims to increase and diversify overall production, diversify employment opportunities and promote better management of natural resources and the environment, including the rehabilitation and regeneration of mangrove forests.

One of the fundamental principles of the sector strategy is, wherever possible, to engage and build the capacity of user groups at the village level to plan, prioritize and mobilize their labour and organize implementation. This will help to channel assistance so as to best address their own perceived needs and promote the equitable distribution of inputs and services for the poor and vulnerable groups, such as female-headed households and the displaced. Sustainable restoration of the agriculture sector will promote food security and allow agriculture-dependent economic activities to regenerate.

Above the village level, addressing access to technical services and financial services such as adapted micro credit will facilitate the expansion of both agricultural and non-agricultural livelihood activities and the development of agriculture-based enterprises. Capacity building and developing viable and more responsive institutions will increase the chances for sustainable long-term development, thereby improving food security and reducing poverty.

The agriculture sector programme strategy is designed to ensure that emergency, recovery and rehabilitation efforts are bridged properly, reducing the gap between recovery and long-term sustainable development. Building viable capacities, developing the necessary institutions and introducing modern approaches to livelihoods, based on environmentally friendly approaches, are therefore essential elements of the strategy. The sector strategy also envisages creating an environment for constructive dialogue with all stakeholders, especially relevant authorities of the Government that would encourage improvements to existing policies, strategies and regulatory frameworks.

4.1 Government strategy

This three-year agricultural strategy is fully coherent with the Government’s post-Nargis reconstruction plan, which addresses the restoration and improvement of productive capacities and infrastructure in cyclone-affected areas, prioritizing the recovery of agriculture (including fisheries and livestock) and local trade channels as the main pillars of rehabilitation and recovery.¹² Notably, the rehabilitation and regeneration of mangrove forests have been identified among essential measures to protect the area against future disasters.

In its August 2008 plan, the Government of Myanmar foresees a four-stage intervention in the agriculture sector:

¹² Programme for Reconstruction of Cyclone Nargis Affected Areas and Implementation Plans for Preparedness and Protection for Future Natural Disasters; Union of Myanmar, The National Natural Disaster Preparedness Central Committee, 15 August 2008.

- **Crops:** Restoration and rehabilitation of lost and damaged paddy fields; increased paddy production in other regions of the country that have not been affected by the cyclone to compensate for paddy losses; improved and increased production in cyclone-affected areas to enhance food security; and intensive backyard gardening and production of marketable fruits and vegetables for subsistence farmers and the landless.
- **Fisheries:** Recovery and reconstruction of damaged and lost physical assets (boats, gear, landing sites, processing plants), leading to increased production and fisheries workers' resumption of production, post-harvest processing and marketing processes (deep sea fishing, coastal fishing and inland fishing, including fish and shrimp ponds and farms).
- **Livestock:** Restocking of lost animals, livestock reproduction management and development, and storm-proof animal shelters are among major issues addressed in the plan.
- **Forestry:** Rehabilitation and regeneration of natural mangrove forests, increased forest (mangrove) plantation outside of the natural mangrove areas and community forestry are among major issues to be addressed in the plan.

4.2 Strategy of other international organizations

The PONJA, carried out under the auspices of the TCG and launched on 21 July 2008, identified needs to guide the ongoing and planned humanitarian relief and early recovery activities, informed the Revised Flash Appeal and provided inputs for longer-term recovery and reconstruction planning.

To complement the Government's reconstruction plans, the TCG agreed for the UN and its Inter-Agency Standing Committee (IASC) partners to produce three-year, sectoral post-Nargis recovery plans for the following sectors: Health; Education; Livelihoods (agricultural and non-agricultural); Water, Sanitation and Health (WASH); Shelter; and Disaster Risk Reduction (DRR). Crosscutting issues and themes, such as gender, vulnerability and the environment, were also addressed. The PONREPP process ensured the active participation of, and close coordination with, donors.

The consolidated PONREPP will be presented in connection with the ASEAN-UN Summit scheduled for mid-December, with the overall objective of establishing a common understanding for recovery and rehabilitation processes, based on acceptable international norms and standards.

The process to develop the sector-specific recovery plans was carried out through the establishment of a TWG, consisting of representatives of UN agencies, NGOs (local and international), government counterparts and donors involved in the sector. The TWGs were responsible for developing a Concept Note, outlining the key elements of the Recovery Strategy common to all parties involved. The Concept Note guided the development and drafting of the recovery plan. FAO chaired the Livelihoods TWG and co-chaired the DRR and Early Recovery TWG.

Subsequently, this three-year agriculture sector recovery strategy is fully in line with and reflects the needs and plans outlined in the PONREPP.

5. THE PROGRAMME

The overall programme objective is to rehabilitate and, where possible and feasible, better build the main sources of livelihoods in the cyclone-affected areas of the delta. The overall programme's objective will be achieved through a series of immediate rehabilitation and mid-term recovery interventions, leading to long-term sustainable development in the four agriculture subsectors, namely, crops and horticulture, fisheries and aquaculture, livestock and forestry.

5.1. Summary of programme components

5.1.1 Component I, crops and horticulture

Farming communities' livelihoods sustainably restored and improved (quantitatively and qualitatively) on an environmentally sound basis, and casual agricultural labour demand re-established.

Community-based producer groups will be developed, involving small- to medium-scale farming households with potential to create seasonal job opportunities for the landless poor. Adapted environmentally sound production and harvesting technologies will be introduced. Local seed production will be supported and community-based storage capacities will be improved through interest groups, while the capacity of support service providers will be developed to provide better extension, plant protection and integrated crop management services. Existing financial services will be assessed and adapted credit schemes will be in place to allow farming communities to increase and improve production and productivity. Intensive backyard vegetable gardening, later yielding surplus production for sale, will be introduced in the first year to assure minimum food security for vulnerable groups and will be expanded to create cash incomes and improve household diet.

5.1.2 Component II, fisheries and aquaculture

Sustainable rehabilitation and recovery of the fisheries and aquaculture sector and the livelihoods that depend on it¹³. The fisheries component is a programme consisting of the rehabilitation of capture fisheries, post harvest and aquaculture with support to strengthen fisheries resource assessment and management.

The programme will include support to sector coordination and the provision of technical advice to rehabilitation partner agencies and the Government as required. The capture fisheries component will provide capacity building to the sector along with safer and improved boats and fishing gear. The level of reconstruction of boats and provision of gear will be determined in a manner that will avoid overcapacity and ensure the long-term sustainability of fisheries natural resource use. Strengthening and improving post harvest and marketing activities and related livelihoods will be supported, including the rehabilitation of fisheries landing areas and ice production.

Existing financial services will be studied and adapted credit systems will be initiated to allow especially small- and medium-scale fishers and post-harvest enterprises to increase and improve the quality and quantity of production. Recovery in fisheries and aquaculture production, in turn, will increase the demand for skilled and unskilled

¹³ In support of the Productive Lives component of the PONREPP.

labour in areas such as processing, marketing and supplying boats, gear and other equipment. Although replacing fishing boats and gear is a vital initial step both for boat owners and fishers, equal attention will be paid to the rehabilitation of zones surrounding fishing areas. For aquaculture producers, restoration of hatcheries will be critical to the production and supply of seed. Restoring small-scale fish farms and household ponds (in collaboration with relevant government agencies and partners) in the initial stages will improve aquatic animal health and the on-farm environment.

The beneficiaries will be small- and medium-scale, inland and coastal fishers (including household-based aquaculture producers). The programme will allow the re-creation of a significant number of jobs in the fishery value chain. The programme will dedicate special focus on women, the poor and marginalized groups.

5.1.3 Component III, livestock

Farming communities increase livestock production and productivity, landless and vulnerable households improve their livelihoods, and sustainable and environmentally friendly principles are more widely adopted.

This will be achieved by replacing lost draught animals for farming households, while the restocking of small animals (e.g. pigs, goats and poultry) will help the poor landless, women and other vulnerable households to generate income. An animal banking system – whereby households most in need are given animals for use and breeding and then distribute the offspring to others in the community – will be tested in selected areas through community-based organizations in the first year. These activities will be expanded in the following two years, which will further augment the size of animal herds and poultry flocks, providing sustainable and increased income to households, and will boost the flow of meat, fresh eggs and other products in the local and regional markets. Provision of cyclone-proof animal shelters will protect livestock and poultry from future natural disasters. The first priorities are restocking draught animals to enable farming communities to resume normal cultivation, and restocking pigs, goats and poultry to revitalize the livelihoods of the poorer groups.

5.1.4 Component IV, forestry

Livelihoods of households heavily dependent on mangrove forests are improved through community-based forest use strategies, and disaster risk reduction is addressed through mangrove forest plantation and management.

The regeneration of natural mangrove forests and plantation of mangroves along riverbanks and around villages will reduce future disaster risks. Community-based user groups will be encouraged to adopt a community forestry approach that has been tested with successful results in parts of the country in the past. Existing user groups will be revitalized and carefully assessed during the first year and lessons learned will be used to expand the approach in other areas. Technical and vocational training initiatives will enable communities to meet the demand for simple products in local markets. While this community-based approach to forestry is necessary in the initial stages, national level Comprehensive Coastal Zone Management (CCZM) is also needed. A CCZM concept will be developed and tested in selected areas during the first year, including intensive capacity building and institutional development. The programme will be fully operational in the following years.

6. IMPLEMENTATION ARRANGEMENTS

The success of the programme's implementation depends much on how the stakeholders interact. This entails a common understanding of issues among UN agencies, between the UN and NGOs and between the international community and the Government. Far more, the success of the programme and its sustainability depend much on the role of the affected people themselves.

FAO is the implementing agency, in close cooperation and coordination with relevant technical departments of the Government. International and national NGOs and civil society organizations will be sought for the implementation of programme activities in the field. Most NGOs have an operational presence in the field, although limited in many cases, and have a better understanding of the communities and their social and economic contexts. Specific regulations will be in place to monitor NGO activities during implementation to ensure programme quality, timely delivery, accountability and visibility.

Extensive technical and managerial support will be necessary during the initial stages of programme implementation as all NGOs may not be acquainted with the new and adapted technologies, approaches and methodologies. This will ensure that implementing partners fully understand the concepts, approaches and methodologies, as well as issues of accountability towards the agency, donors and the affected communities. The private sector will be involved, where available and feasible, especially in the delivery of inputs, supplies and provision of services.

Capacities will be built and institutions further developed at all levels to increase national and local capacities, thus allowing for a systematic exit strategy and ensuring the sustainability of the programme. A successful exit strategy will require that all activities are closely coordinated with relevant Government authorities at national, division and township levels. The use of Government technical expertise, where available, will be maximized at all levels.

7. SOCIAL ASPECTS

Communities' active involvement and participation in the assessment, design of detailed planning and implementation processes are key to the success of the programme and its sustainability. Consequently, all programme components and related strategies foresee the establishment and development of community-based organizations, user- and interest-group formation and an extensive capacity building programme. However, it must be noted that community-based structures and organizations often do not include all segments of the population, influenced by traditional social structures and/or existing power structures.

Subsequently, there often remains a small group, but generally the most vulnerable people, left outside of the established community organizations. This is the case especially where international organizations are involved and have a limited understanding of socio-economic contexts pertaining to power structures, the role of gender and the context of vulnerability. Often women (especially female-headed households), migrants, displaced people, the weak, the elderly and the poorest segments of the community do not benefit from programme implementation and its

resources because they are not actively involved in the process of establishing such organizations. Therefore, attention will be paid to organize these marginalized groups of people and to ensure that they actively participate in the processes and benefit from recovery and rehabilitation efforts.

The scale and scope of damage inflicted by Cyclone Nargis is colossal and will require financial resources and time to help the affected population to recover from the shock, both psychologically and economically. Reports indicate that there is still a large number of displaced people who (willingly or unwillingly) have not returned to their places of origin. Most of this group of people have lost entire villages, including housing, infrastructure, land, tools and assets, whereby some villages might be beyond repair. While many reside currently in other villages and host communities have so far been very helpful, the situation in the longer term may become a source of tension and even conflict. Therefore, a permanent but suitable solution, which is acceptable to the affected communities, will be required that can effectively address the needs of the displaced in a sustainable way.

8. ENVIRONMENTAL ASPECTS

The delta region is considered a fragile area with regular storms, floods and badly maintained dykes and embankments. The population of the delta understands the risks and constraints, though the region is considered the rice granary of the country. Risks of natural disasters are on the rise in the region as massive cutting and over-exploitation of the natural mangrove forests are making way for paddy land, settlements and other socio-economic activities, without a sustained national plan to prevent further deterioration.

Therefore, this programme will address all issues related to the environment in each subsector. For the crops subsector this includes a drastic reduction in the current use of pesticides and fertilizers through efficient fertilizer use and improved nutrient management.

The fisheries subsector will address issues related to improved capacities to effectively monitor the catch and will make efforts to avoid over-fishing with special attention to resources at risk. Furthermore, the impact of fisheries and aquaculture activities on mangroves and flood plains will be assessed systematically by introducing appropriate management techniques, thus preventing further habitat loss in mangroves and flood plains. The programme will also pursue the improved management and reduced environmental impact of aquaculture activities (including the reduction of discharged nutrients, suspended solids and other pollutants), as well as reducing destructive fishing practices, safeguarding biodiversity and promoting the implementation of the internationally accepted Code of Conduct for Responsible Fisheries (CoCRF).

Similar issues will be addressed through livestock and forestry interventions. In particular, increasing and safeguarding the existing natural mangrove forests, as well as improving and increasing forest plantations will be undertaken through zone management practices in all subsectors. In addition, dialogue will be initiated with Government authorities on improved policies, strategies and regulatory frameworks.

9. MONITORING AND EVALUATION

The programme will develop a monitoring and evaluation system consisting of a set of impact/outcome indicators, derived from the programme's immediate and mid-term goals and objectives. This will ensure an effective assessment of progress and provide timely feedback for possible changes that may be required in the course of implementation due to unforeseen changes in the socio-economic context and programme strategy.

Input and output indicators for each subsector (crops, fisheries, forestry and livestock) will enhance the regular monitoring and evaluation of programme performance, including the identification of potential problems and/or successes. The indicators will be used also to assess results during evaluation, including beneficiary satisfaction with the programme's results.

Programme staff will provide regular and accurate data and information at each interval, which will be compared with selected indicators to closely monitor progress and to prevent any unnecessary diversion from programme plans.

With regard to evaluation, the programme will carry out regular internal evaluations (e.g. on a three-month basis) to ensure the effectiveness and efficiency of the programme's design, and where required necessary measures can be taken. Internal evaluations will substantially contribute to avoiding total diversion from programme objectives in due time, providing a platform to collate lessons learned and applying best practices. Two external evaluations are proposed for the programme – a mid-term evaluation at the end of the first year and a final evaluation at the end of the programme.

ANNEX 1 – Map of Flood-affected Area

ESTIMATED TOTAL POPULATION LIVING WITHIN FLOOD-AFFECTED AREAS, MYANMAR

Flood Analysis with MODIS Terra & Aqua Data Recorded 5 May & 15 April 2008; and LandScan 2005

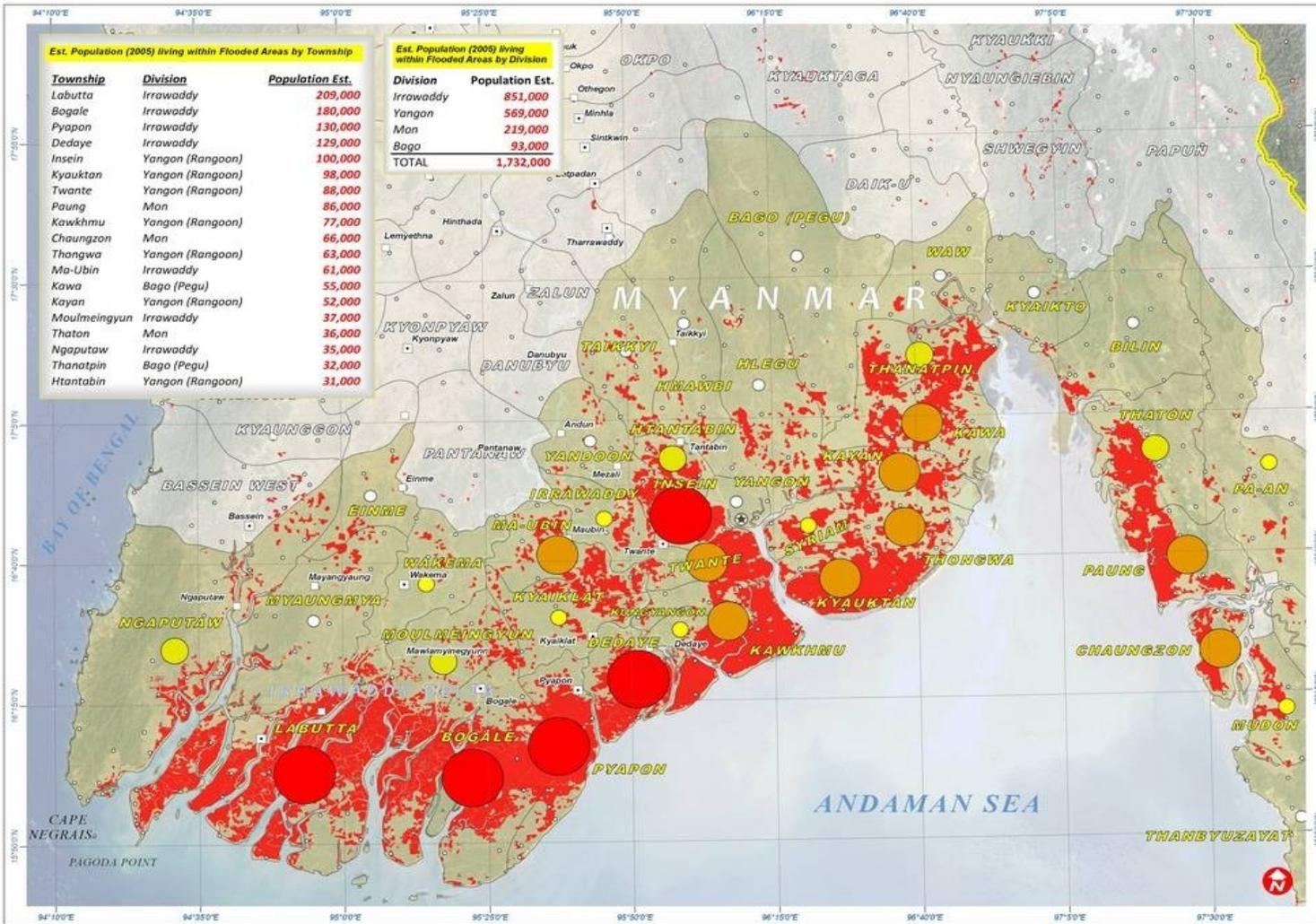
This map provides an estimate of those potentially-affected people living directly within flooded areas of southern Myanmar. Red areas shown in the map represent standing flood waters identified from MODIS satellite imagery acquired on 5 May 2008 at a spatial resolution of 250m. Population estimates have been aggregated by township using the LandScan 2005 database. This flood detection is a preliminary analysis & has not yet been validated in the field.



Cyclone Nargis 6 May 2008
Version 1.2
TC-2008-000057-MMR

Township	Division	Population Est.
Labutta	Irrawaddy	209,000
Bogale	Irrawaddy	180,000
Pyapon	Irrawaddy	130,000
Dedaye	Irrawaddy	129,000
Insein	Yangon (Rangoon)	100,000
Kyauktan	Yangon (Rangoon)	98,000
Twante	Yangon (Rangoon)	88,000
Paung	Mon	86,000
Kawkhmu	Yangon (Rangoon)	77,000
Chaungzon	Mon	66,000
Thongwa	Yangon (Rangoon)	63,000
Ma-Ubin	Irrawaddy	61,000
Kawa	Bago (Pegu)	55,000
Kayan	Yangon (Rangoon)	52,000
Moulmeingyun	Irrawaddy	37,000
Thaton	Mon	36,000
Ngaputaw	Irrawaddy	35,000
Thanatpin	Bago (Pegu)	32,000
Htantabin	Yangon (Rangoon)	31,000

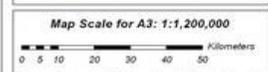
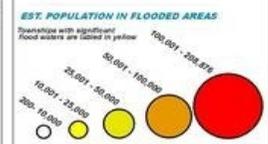
Division	Population Est.
Irrawaddy	851,000
Yangon	569,000
Mon	219,000
Bago	93,000
TOTAL	1,732,000



Legend

- Capital
- City/Large Town
- Town
- Village
- International Border

SATELLITE FLOOD ANALYSIS
Satellite-Detected Flood Waters (5 May 2008)



Cyclone Data: NOAA, Un of Hawaii, Tropical Storm Risk
 GIS Data: USGS, NGA, ESRI, RespondKeybase
 Population Data: LandScan 2005
 Satellite Data: MODIS-Aqua & Terra
 Imagery Date: 5 May & 13 April 2008
 Resolution: 250m
 Flood Analysis: UNOSAT (5 May 2008)
 Map Production: UNOSAT (6 May 2008)
 Projection: UTM Zone 46 North
 Datum: WGS 1984

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be accurate nor do they imply official endorsement or acceptance by the United Nations. This map was produced by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Program (UNOSAT). UNOSAT provides satellite imagery & related geographic information to UN humanitarian & development agencies & their implementing partners.

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ANNEX 2 – Concept of Sustainable Livelihood Approach

The agricultural livelihoods recovery plan is underpinned conceptually by the Sustainable Livelihoods Framework (SLF). The approach focuses on the restoration of agriculture-based livelihoods – in particular, those of the poorest, most food insecure and worst affected households – rather than on the straightforward recovery/repair of the agriculture sector *per se*. The approach emphasizes the human dimension of agricultural recovery and enables the worst affected households to restore their livelihoods in the shortest time possible while reducing their vulnerability to future natural disasters and related risks.

The conceptual foundations of the livelihoods approach

Livelihoods consist of the capabilities, assets – both material and social resources – and activities required for a means of living. An agriculture-based livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide net benefits to other livelihoods locally and more widely, both now and in the future, while not undermining the natural resource base. The extent to which a livelihood is sustainable is determined by the interaction of several forces and elements.

The framework consists of a number of key elements as follows:

- livelihood assets and activities;
- vulnerability and coping strategies;
- policies, institutions and processes; and
- livelihood outcomes.

The livelihood framework contains a “core” in which assets are put into use through various strategies and activities to produce certain livelihood outcomes. This core exists in a context characterized by existing institutions and policies affecting people, from the extended family and local community to the larger context of the national state and beyond, and the vulnerability context which describes the set of external social, economic and political forces and stresses to which people are subject.

Livelihood assets

Assets refer to the resource base of people. Assets are often represented as a pentagon in the SLF, consisting of the following five categories: (i) natural resources (also called natural capital); (ii) physical reproducible goods (physical capital); (iii) monetary resources (financial capital); (iv) manpower with different skills (human capital); and (v) social networks of various kinds (social capital).

These categories cover the following types of issues and details:

- **human capital:** labour power, health and nutritional status, skills and knowledge;
- **natural capital:** access to land, water, wildlife, flora and forests;
- **social capital:** stocks of social trust, norms and networks that people can draw upon to solve common problems, mediated through kin networks and group membership;
- **physical capital:** houses, vehicles, equipment and livestock; and
- **financial capital:** savings, gold/jewellery, access to regular income, net access to credit and insurance.

Vulnerability and coping strategies

Individuals, households and communities are exposed to unpredictable events that can undermine livelihoods and cause them to fall into poverty or destitution. Some of these events

have a sudden onset (e.g. earthquakes), while others develop over a longer period (e.g. conflict, soil erosion), but all can have negative effects on livelihoods.

In a disaster such as Cyclone Nargis, the entire population may have been exposed to the same shock, but the vulnerability and resilience of people to the impact of the shock will vary. Vulnerability depends on the asset base that people have prior to the crisis and their ability to engage in various coping strategies.

Households with many livelihood assets are generally more resilient (able to withstand shocks) than households with fewer assets. Thus resilient farming households have sufficient savings to buy food when crops fail, small traders have sufficient cash to buy new stocks of raw materials after a disaster has destroyed their previous stock and pastoralists can afford to lose or sell a few animals and still have enough to build up their herds again after the emergency passes.

A coping strategy is a short-term response to threats to livelihoods. Coping strategies can be successful (in terms of protecting the ability to make a livelihood) when they are able to preserve vital assets, or negative when they are unable to do so and may lead to downward spirals of impoverishment. Any response should aim to support existing positive coping strategies and release households and communities from dependence on negative ones.

An understanding of coping strategies, who is involved, and the related consequences and costs is important in analysing the severity of impact of an emergency.

Livelihood strategies and outcomes

The most basic livelihood outcomes relate to satisfaction of elementary human needs, such as food, water, shelter, clothing, sanitation, health care and others. The ultimate outcome is to achieve the preservation of the household and to raise the next generation with a desirable quality of life.

People tend to develop the most appropriate livelihood strategies possible to reach desired outcomes such as food security, good health and wellbeing, among others. Unstable or unsatisfactory livelihood outcomes may be the result of several factors which often interact, including low levels of livelihood assets, high degree of vulnerability to external shocks, and insufficient livelihood support from surrounding institutions (e.g. local government and financial markets). It is the intention of the strategy described in this section to identify the relative importance of these various factors in explaining the impact of a disaster on livelihood outcomes and to propose the most effective and efficient strategy for agricultural livelihood recovery.