

CHAPTER 2 EXTENT OF DISASTER DAMAGE

2.1 EARTHQUAKE

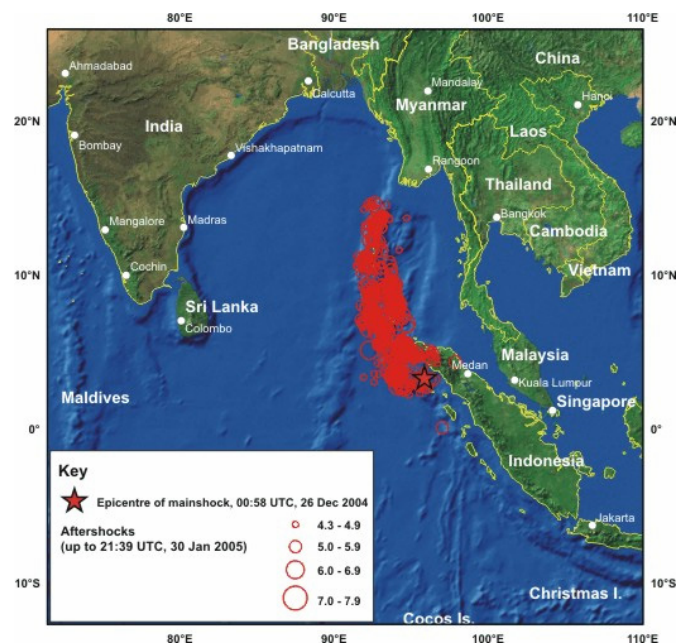
A powerful earthquake of magnitude of 9.0 struck northern Sumatra at 07:58 a.m. The earthquake was felt widely along the coast of Indian Ocean. A major Indian Ocean-wide tsunami was generated by this earthquake which struck India, Sri Lanka, Bangladesh, Thailand, Malaysia and part of Africa, causing heavy fatalities. Heavy damage and panic were reported from Banda Aceh City. Many buildings in the city collapsed in the earthquake and a number of cracks appeared in buildings which were shaken violently. The earthquake was recorded as the third largest earthquake in the world (Table 2.1.1) and the strongest during the instrumented era in seismology i.e. 1966 to present.

Table 2.1.1 Historical Earthquake in the World since 1900

	Location	Date	Magnitude
1.	Chile	1960/05/22	9.5
2.	Prince William Sound, Alaska	1964/03/28	9.2
3.	Off the West Coast of North Sumatra	2004/12/26	9.0
4.	Kamchatka	1952/11/04	9.0
5.	Off the coast of Ecuador	1906/01/31	8.8
6.	Northern Sumatra, Indonesia	2005/03/28	8.7
7.	Rat Islands, Alaska	1965/02/04	8.7
8.	Andreanof Islands, Alaska	1957/03/09	8.6
9.	Assam - Tibet	1950/08/15	8.6
10.	Kuril Islands	1963/10/13	8.5
11.	Banda Sea, Indonesia	1938/02/01	8.5
12.	Chile-Argentina Border	1922/11/11	8.5

Source : USGS

A number of aftershock occurred since 26 December 2004. The epicenter of the 26 December 2004 earthquake, marked by the star, is plotted along with over 590 associated aftershocks up to 30 January 2005, marked by red circles (Figure 2.1.1). These aftershocks clearly delineate a 1,000 km wide of the plate boundary between the Indian Plate and the Burmese Micro-Plate that ruptured in the main-shock on 26 December 2004. Some of the larger aftershocks were strong enough to be felt as far as Chennai on the east coast of India, causing panic and minor damage.



Source : British Geological Survey

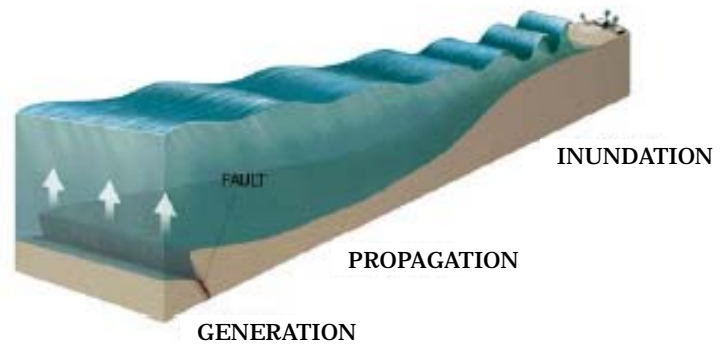
Figure 2.1.1 Location Map of Epicenters of Main- shock and Aftershock

2.2 TSUNAMI

2.2.1 Tsunami Wave

The devastating tsunami was a direct consequence of the earthquake, which causes movement of the seafloor all along the length of rupture, displacing a huge volume of water and generating the tsunami wave. The vertical uplift could have been as much as several meters.

A tsunami generally consists of a series of waves. When a tsunami approaches a shoreline, the wave begins to slow down an increase in height, depending on the topography of the seafloor (Figure 2.2.1). Often, the first signs of a tsunami are a receding sea water level caused by the trough of the wave. The receding sea level immediately before the tsunami approaches was also observed at the shoreline of Banda Aceh on 26 December 2004.



Source : Imamura, SOI Asia Special Seminar, 2005

Figure 2.2.1 Tsunami Generated by Earthquake

The wave height of a tsunami can be highly variable in a local area depending on the underwater topography, orientation to the oncoming wave, the tidal level, and the magnitude of the tsunami. In this report, the maximum vertical height to which the water is observed with reference to sea level is referred to as “run-up”. The maximum horizontal distance that is reached by a tsunami is referred to as “inundation”.

2.2.2 Magnitude of Tsunami

Historical tsunamis generated by the earthquake at a 1,000-km wide of the plate boundary between the Indian Ocean and the Burmese Micro-Plate are given in Table 2.2.1. The large scale of tsunami (Mt=3) as same as that in 2004 was recorded in 1861; namely, 145 years ago, and the recent tsunami with medium-scale (Mt=2) was in 1907, 98 years ago. The magnitude of tsunami in 2004 is evaluated with a probability of once in 100 to 150 years.

Table 2.2.1 Historical Tsunami at Southwest from Sumatra Island

Date	Latitude	longitude	Earthquake Scale (M)	Tsunami Scale (Mt)
1797/02/10	0°N	99°E	8	3
1833/11/24	2.5°N	100.5°E	8.25	2.5
1843/01/05	1.5°N	98°E	7.25	2
1861/02/16	1°N	97.5°E	8.5	3
1907/01/04	1.5°N	97°E	7.5	2

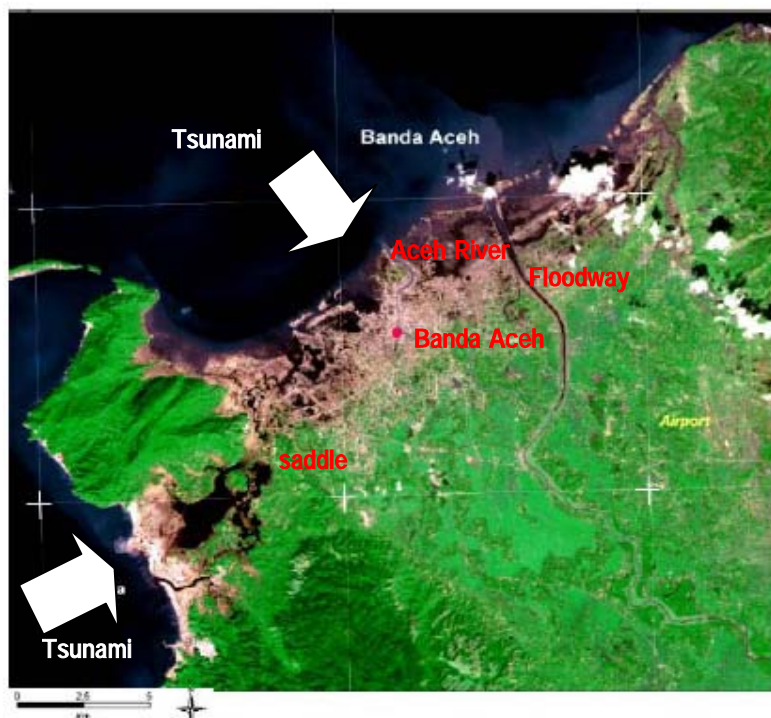
Source : Soloviev and Go, Tsunami Catalogue, 1975

The tsunami scale (Mt) was defined as based on Imamura-Iida scale; namely, Mt=2 indicates tsunami wave height of 4 to 6 meters and Mt=3 means 10 to 20 meters.

2.2.3 Tsunami Inundation at Banda Aceh

A major tsunami struck the coast of the Province of Aceh immediately after the earthquake. Heavy damage and casualties were reported from Banda Aceh City and other towns in the Province of Aceh. Large parts of Banda Aceh were destroyed by the tsunami. Satellite photos show the true extent of the damage to the city, with large northern areas completely wiped out.

Many fishing villages and towns such as Calang and Meulaboh, along the west coast of the Province of Aceh were almost completely washed away. People are believed to have watched the water recede and ran to pick up fish left stranded on the sea floor while other rushed to take photographs. The waves that followed penetrated the coast to a great extent but in some places their force was arrested by high cliffs along the seashore. A satellite photo around Banda Aceh City is shown in Figure 2.2.2. The area changed in color into charcoal indicates the area of tsunami inundation.

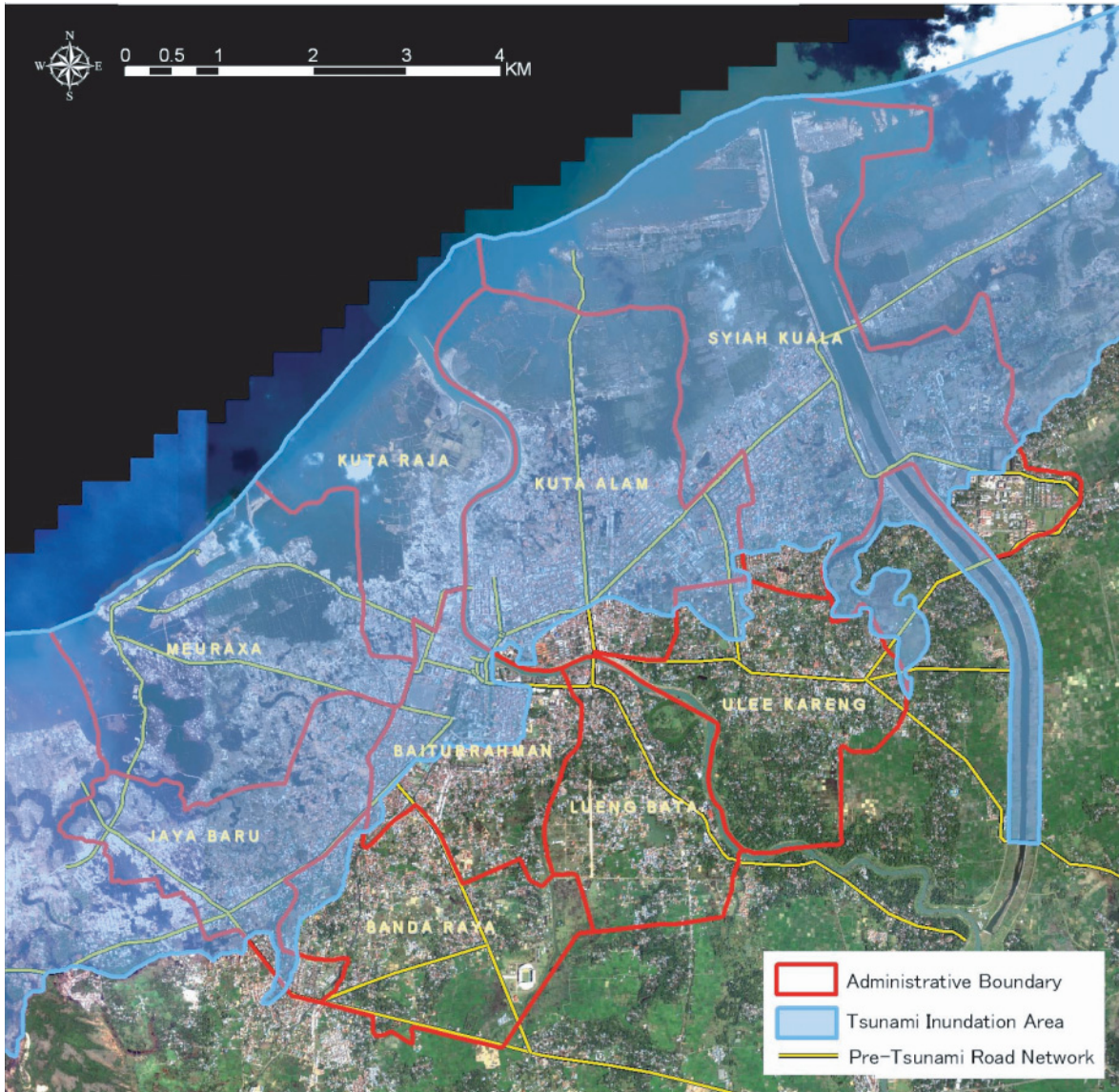


Source : BAPPENAS, Blueprint, 2005

Figure 2.2.2 Tsunami Inundation Area

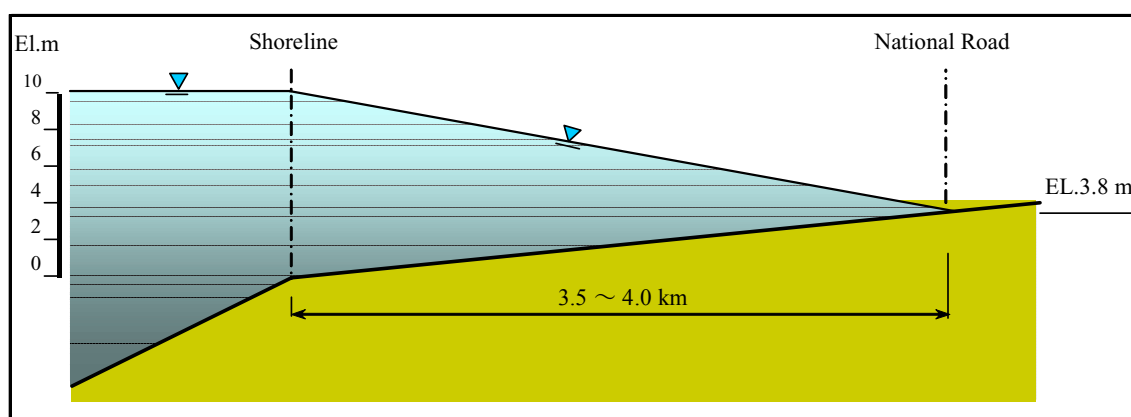
The tsunami wave height was estimated at about 10 m at northern coastline of Banda Aceh City and about 20 m along western coastline of Indian Ocean. The tsunami from the western coastline overflowed a saddle of mountain ridge of about El.20m and rampaged into Banda Aceh city. The tsunami from the northern coastline destroyed whole wooden houses and reinforced-concreted

buildings within a radius of 2 km, and houses and buildings remained as a distance increased over 2 km from the coastline. The tsunami inundation extended to about 3.5 to 4.0 km radius from the coastline with the run-up height of El.3.8 m. The tsunami inundation area is shown in Figure 2.2.3. The tsunami inundation and run-up height are also illustrated schematically in Figure 2.2.4.



Source : JICA Study Team

Figure 2.2.3 Tsunami Disaster Map at Banda Aceh



Source : JICA Study Team

Figure 2.2.4 Schematic Diagram of Tsunami Inundation and Run-up

2.3 ENTENT OF DISASTER DAMAGE

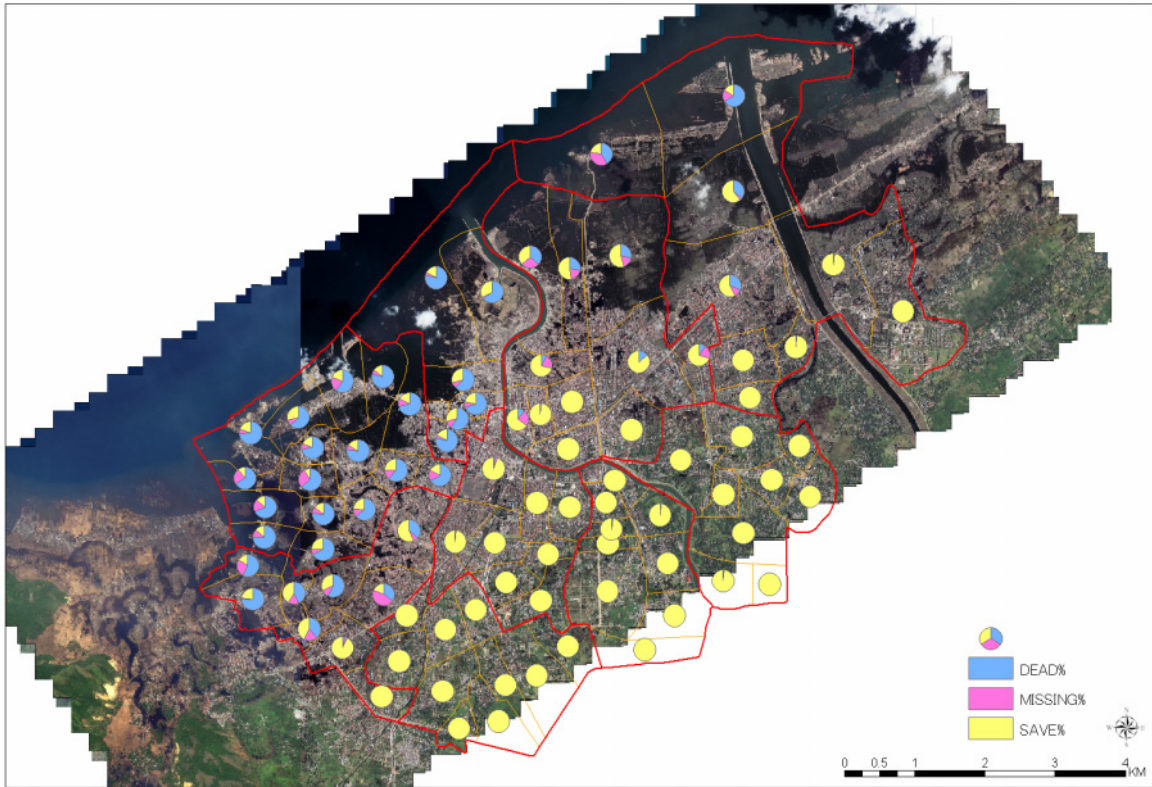
2.3.1 Casualties

The Banda Aceh City is organized administratively into 9 kecamatan and 89 desa. According to the population census carried out by the city office, the pre-disaster population of 263,668 was reduced to 192,194. Casualties (dead and missing) reached 71,475 as of 12 April 2005, and the dislocated families of 65,500 persons were living at resettlement houses (Table 2.3.1 and Figure 2.3.1).

Table 2.3.1 Population in Banda Aceh City

District (Kecamatan)	Village (Desa)	Population		Dislocated People
		Pre-Disaster	Post-Disaster	
1. Meuraxa	16	31,218	5,657	867
2. Baiturrahman	10	37,449	36,783	5,052
3. Kuta Alam	11	55,062	43,113	23,971
4. Ulee Kareng	9	17,510	17,388	8,126
5. Jaya Baru	9	22,005	11,348	6,163
6. Banda Raya	10	19,071	19,015	9,451
7. Lueng Bata	9	18,360	18,254	5,229
8. Syiah Kuala	9	42,776	35,514	6,411
9. Kuta Raja	6	20,217	5,122	230
Total	89	263,668	192,194	65,500

source: City Office of Banda Aceh (April 12, 2005)

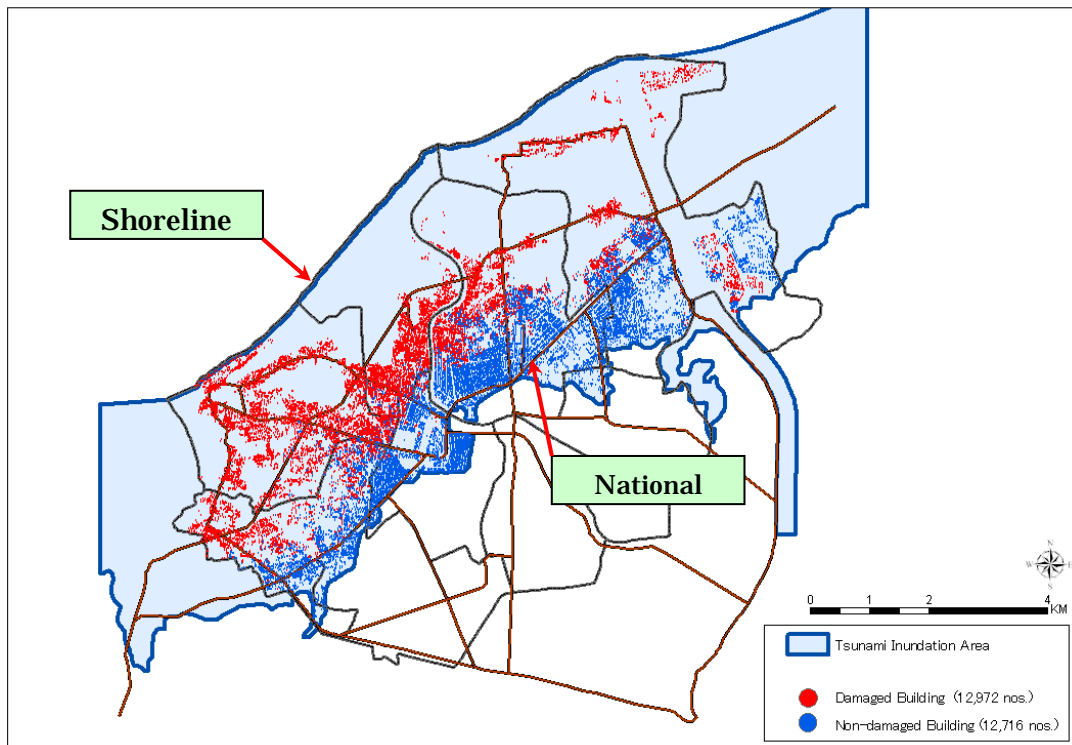


Source : City Office of Banda Aceh (April 12, 2005)

Figure 2.3.1 Casualties by Kecamatan

2.3.2 Houses and Buildings

The tsunami from the northern shoreline destroyed whole wooden houses and reinforced-concreted buildings within a radius of 2 km, and houses and buildings remained as a distance increased over 2 km from the coastline. The totally and partially collapsed houses and buildings were counted based on the GIS-retrieved satellite photos (Figure 2.3.2). The totally and partially collapsed houses and buildings located in tsunami inundation area reached 12,972, about 50.4 % of 25,688 in total.



Source :JICA Study Team

Figure 2.3.2 Damaged and Non-damaged Houses and Buildings

2.3.3 Infrastructure

Major damages on infrastructures are summarized below. Damages by sector are mentioned in detail in Chapter 5.

- (1) Road : Road network in the Banda Aceh City is organized into Status and Non-status road. Status road is more than 3.5 m wide and a total length of 340 km. Non-status road is less than 3.5 m wide and a total length of 117 km. Out of 457 km in total length, about 70 % was damaged.
- (2) Bridge : There were 54 bridges (along 10 for national road, 8 for provincial road, 36 for city road). Of these, 4 bridges were totally collapsed, 3 bridges were heavily damaged and 3 were lightly damaged.
- (3) Ferry Terminal : Construction of ferry terminal at Ulee Lheu commenced in 2001 and partially opened in 2003. About 60 % of construction works were completed as of December 2004. However, the terminal was destroyed completely by Tsunami.
- (4) Water Supply : About 75 % of water supply pipes (385 km long in total) were not in operation. The volume of water supply reduced from 37,600 m³/day (pre-disaster) to 28,400 m³/day (post-disaster).

- (5) Sanitation : Septage treatment plant with a capacity of about 50 m³/day located at coastal area at the left bank of the Aceh River was totally destroyed.
- (6) Seawall : Seawall of 1,340 m long at Ulee Lheu and 750 m long at Syiah Kuala was collapsed.
- (7) Floodway : Dikes of 400 m long at both side of floodway were collapsed.

2.3.4 Public Services

Major damages on public services are summarized below. Damages by sector are also mentioned in detail in Chapter 5.

- (1) Education : Casualties of around 1,883 teachers, 230 administrative staff, more than 250 faculty members, and 40,900 students were identified. As of 2 February 2005, 1,586 units including general schools, Islamic schools, and higher education institutions were totally and partially damaged. It corresponds to 23.5 % of a total number of education institutions before the disaster.

In addition, 2,197 non-formal education institutions were destroyed including early age children education institution (PAUD), community learning center (PKBM), training or course institution, Islamic boarding school, Islamic primary school, and reading Al Qur'an institution (TPA).
- (2) Medical Care : About 20 % of staff in city health office and health centers was lost in Banda Aceh City, In Meuraxa area, only 65 % of pre-disaster staff is remaining. Two out of 7 major hospitals in Banda Aceh City were not functioning.
- (3) Public Market : Eleven public markets were maintained. Of the 11 markets, 5 markets are destroyed and 6 are partially collapsed.
- (4) Mass Media : Main building of TV station (TVRI) was damaged by the earthquake. A temporary studio was settled next to main building for broadcasting, while the radio station (RRI) was heavily damaged because the broadcasting equipment was submerged into tsunami inundation.

CHAPTER 3 GOVERNMENT EFFORTS AND ACTIVITIES BY DONORS AND NGOs

3.1 GOVERNMENT EFFORTS IN THREE (3) STAGES

Government's efforts have been made promptly systematically, comprehensively, efficiently in the use of resources, and effectively in providing aid for the people of Aceh. The comprehensive and integrated approaches were introduced in the three (3) stages, e.g., Emergency Relief Stage, Rehabilitation Stage and Reconstruction Stage as follows:

(1) Emergency Relief Stage (0-3 months)

Aiming at humanitarian relief such as emergency rescue, emergency food and medicine supply, and provision of emergency infrastructure and shelters

(2) Rehabilitation Stage (Short Term: month 4 – year 2 (2006))

Aiming at urgently recovering and restoring the functions of structures and infrastructure, the main goal of this stage is to enhance public services up to an acceptable level.

(3) Reconstruction Stage (Medium Term: to year 5 (2009))

Aiming at reconstructing city and vicinity, the main goal of this stage is to reconstruct the areas and communities affected by the disaster directly and/or indirectly.

3.2 GOVERNMENT ACTION AT EMERGENCY RELIEF STAGE

The Indonesian President issued a Presidential Decree dated 27 December 2004 declaring the earthquake and tsunami wave natural disasters in Aceh and Nias Islands, North Sumatra. The President further issued 12 directives to the entire United Indonesian Cabinet, NAD Governor and Nias Regent to act immediately and comprehensively in the emergency response handling of the natural disaster.

At the initial stage, the Deputy Governor of NAD directly coordinated and controlled the mitigation efforts and emergency handling efforts until the establishment of the Special Coordinating Unit for Aceh. Activities of the Emergency Relief Stage are focused on the followings: (i) evacuation and burial of the victim's dead bodies, (ii) handling of refugees, (iii) provision of emergency aid, (iv) healthcare, sanitation and water supply, (v) city cleaning up, and (vi) preparation of temporary dwelling.

The international community also pays great attention, as shown by the great commitment of the multilateral and bilateral donors, and world communities' readiness to provide assistance. For the emergency response efforts alone, it was recorded that more than US\$ 700 million have been granted by various donors to the Government of Indonesia.

3.3 PREPARATION OF MASTER PLAN

Within a period of three (3) months after disaster, the Government prepared and published “The Master Plan for Rehabilitation and Reconstruction for Aceh Region and Nias” (called as “Blueprint”). The Blueprint aims at guiding rehabilitation and reconstruction works in the affected areas. The vision, mission and basic principles described in the Blueprint are as summarized below:

Vision

To realize an Acehese community that is advanced, fair, safe, peaceful and prosperous based on Islamic values, people centered in the context of the Unitary State and universal perspective.

Mission

- (1) Totally apply Islamic Law
- (2) Enhance human resource quality
- (3) Develop and manage natural resources wisely
- (4) Develop a prominent, competitive and fair regional economic system
- (5) Develop a reliable and efficient infrastructure system
- (6) Develop and preserve Aceh’s cultural and traditional values
- (7) Enhance the bureaucratic competence of the local governments
- (8) Enhance the community’s understanding of solidarity
- (9) Strengthen the implementation of local government’s authority

Basic Principles

- (1) Community-oriented and participatory (people centered)
- (2) Sustainable development (economy, social, environment)
- (3) Holistic (comprehensive)
- (4) Integrated
- (5) Efficient, transparent and accountable
- (6) Effective monitoring and evaluation
- (7) Special autonomy of Aceh Province
- (8) Protection and assistance of the most vulnerable community members (children, widows, disabled, people who lost their houses, property, family’s breadwinner)
- (9) Priority to the areas affected by the disaster

The strategies of the Rehabilitation and Reconstruction Plan are as follows:

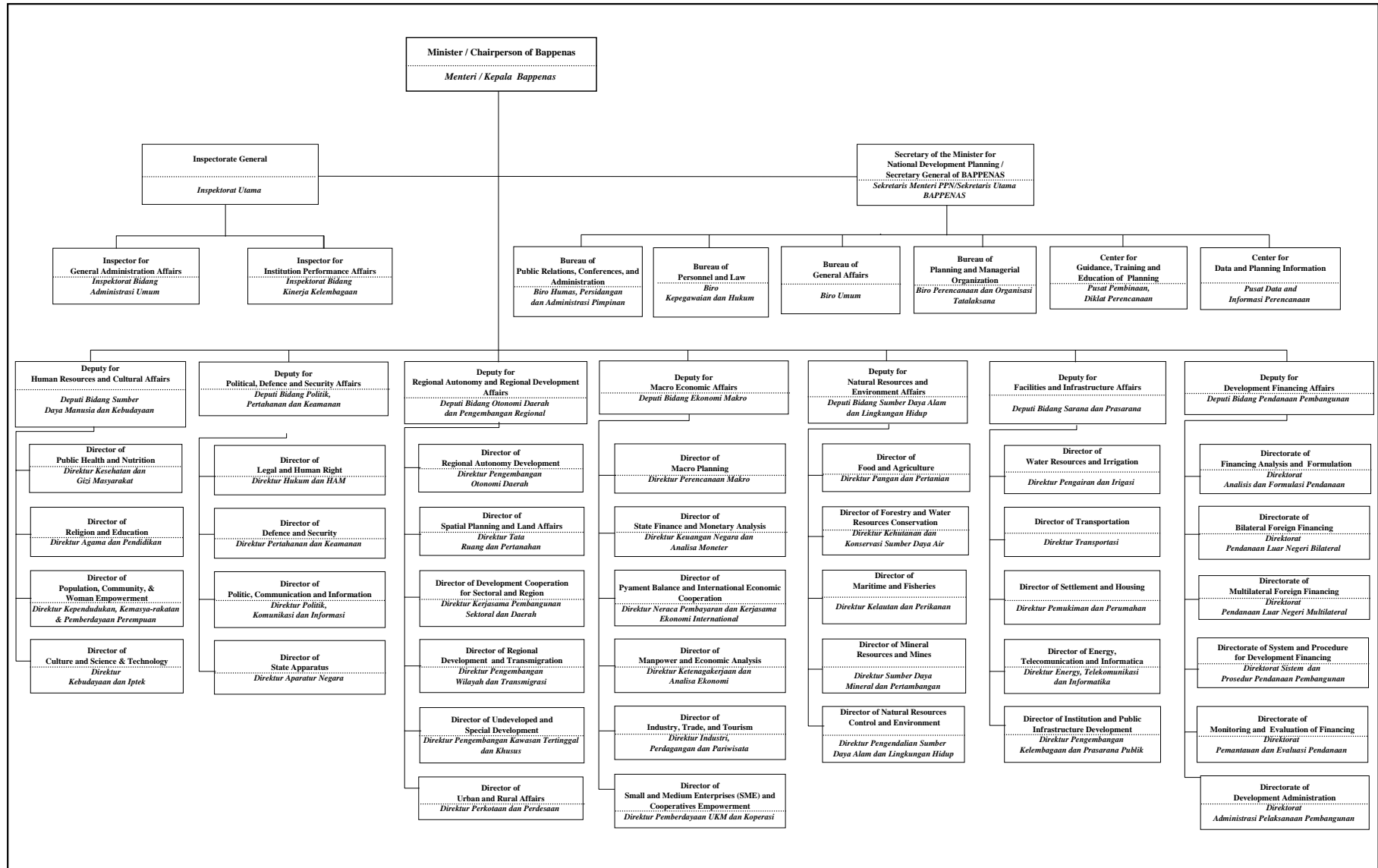
- (10) Protect the public from future natural disasters in the most effective manner
- (11) Create better quality environment for the community
- (12) Reconstruct socioeconomic facilities and infrastructure enabling disaster stricken communities to conduct their normal activities

3.4 ORGANIZATIONS OF THE GOVERNMENT

Organizations of BAPPENAS, BRR, Aceh Province and Banda Aceh City are presented as follows:

(1) Organization of BAPPENAS

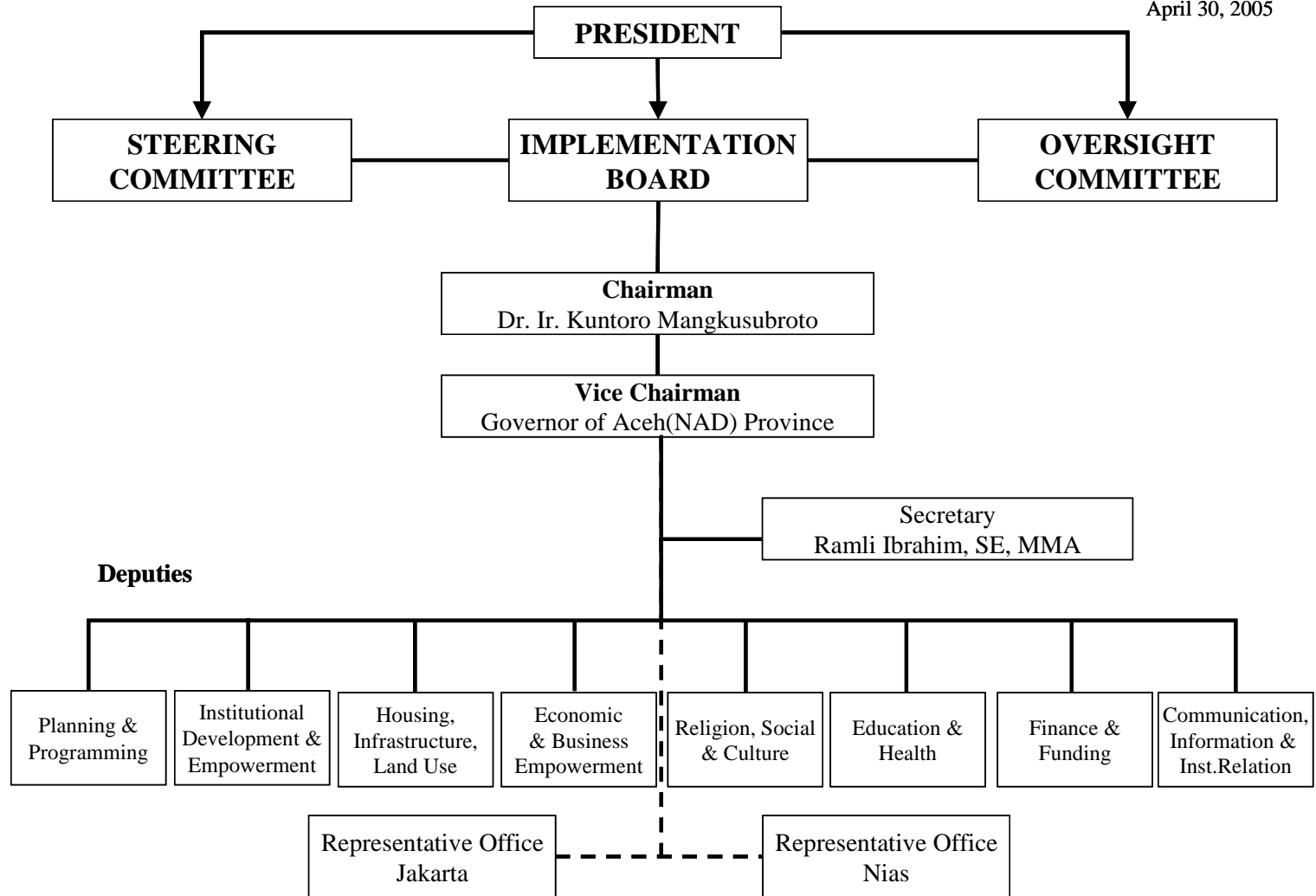
Organizational Structure
National Development Planning Agency (BAPPENAS)



(2) Organization of BRR

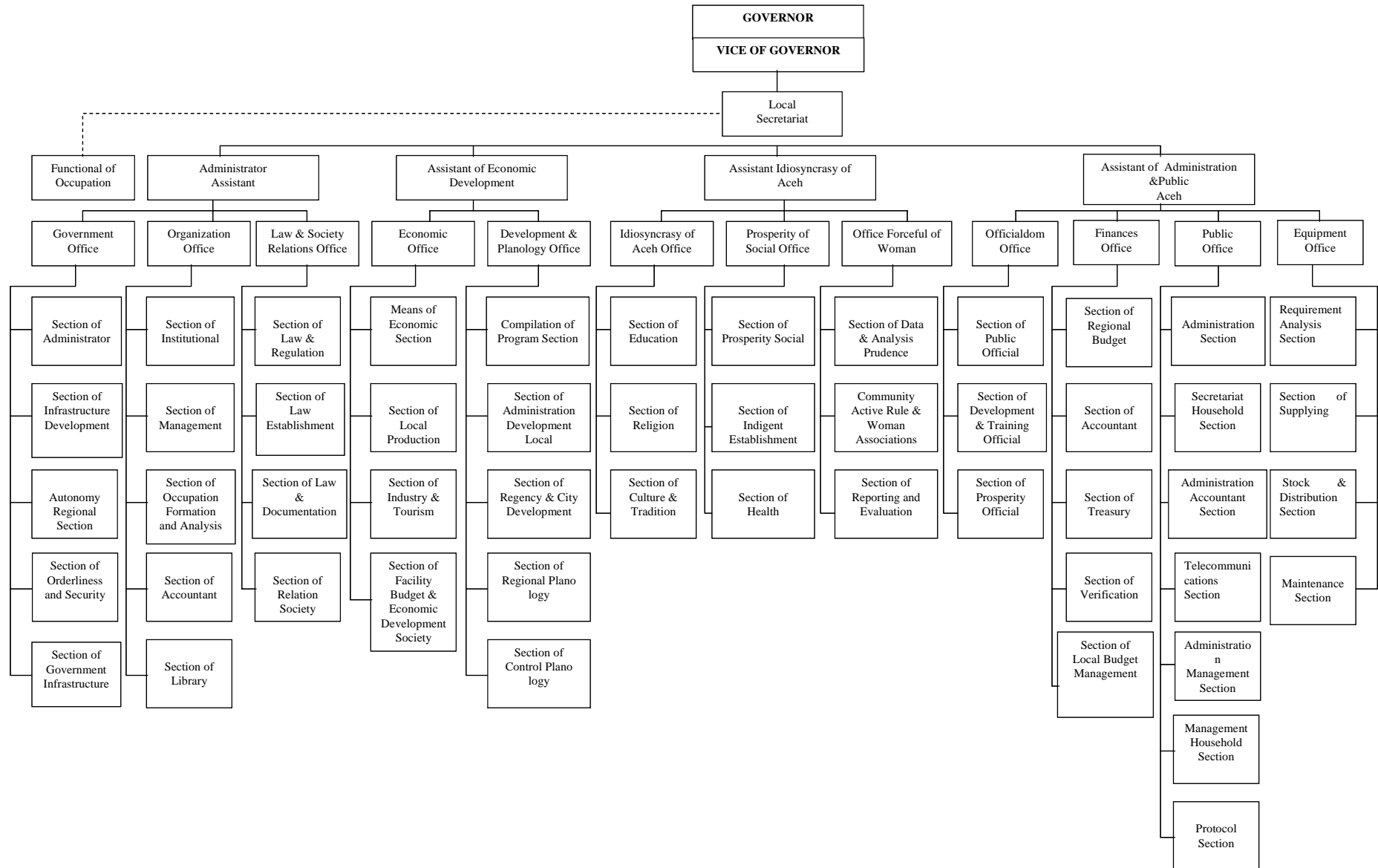
ORGANIZATION STRUCTURE OF ACEH RECONSTRUCTION AND REHABILITATION AGENCY

April 30, 2005

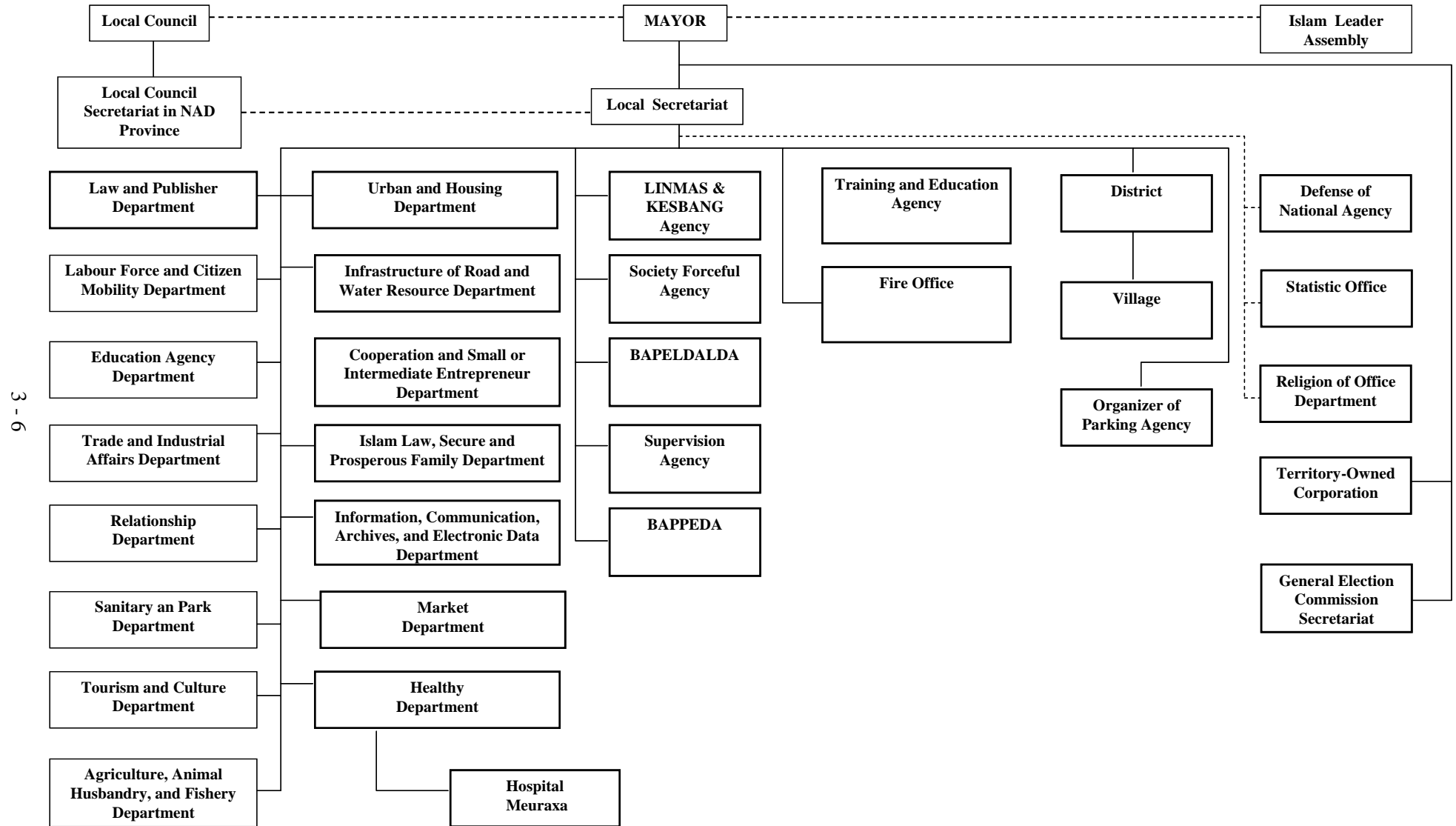


Source: Presidential Decree No.63 / M / Year 2005 / April 29, 2005

(3) Organization of Aceh Province



(4) Organization of Banda Aceh City



3.5 ACTIVITIES BY DONORS

3.5.1 JAPAN

(1) JICA

The short-term assistance focuses on emergency medical support and basic infrastructure rehabilitation. The mid-long term assistance aims for both post-disaster sustainable reconstruction as well as reconciliation, which consists of four (4) major pillars such as “social service restoration”, “community rebuilding”, “local economic reconstruction”, and “governance”. In addition, the support entails the development for disaster management system and tsunami early warning system, as both short and mid-long term assistance.

As basic infrastructure rehabilitation, following projects have been undertaken/being undertaken:

- a) A.T.C and Airport Derivative System Maintenance (undertaken)
Provision of communication equipment as well as dispatch of experts for Training of Trainers (TOT) to rehabilitate airports and A.T.C communication system in Banda Aceh and Meulaboh.
- b) Restoration of Land Right Records (being undertaken)
Dispatch of expert as well as provision of equipment to restore the land rights related documents, stained due to the tsunami in Banda Aceh City.
- c) Restoration of Human Excrement Treatment Plant (being undertaken under this Urgent Development Study)
Design, tendering and construction to restore septage processing facility.
- d) North Sumatra’s West Coast Road Rehabilitation Support (being undertaken)
Basic data collection, planning support, and provision of advices to the implementing agency for the rehabilitation of the 250 km long road between Banda Aceh and Meulaboh, as well as basic design and preparation for bidding for the rehabilitation of the 122 km long road between Calang and Meulaboh, which are supported by Japan’s non-project type grant aid.

As rehabilitation & reconstruction plan support, following projects have been undertaken/being undertaken:

- a) Support for Rehabilitation Blueprint Planning by Syiah Kuala University (undertaken)
Support for field surveys and compilation of suggestions by community members to incorporate local people’s view.
- b) Aceh Youth Conference “Vision toward Aceh Youth (undertaken)

Support for conference by Aceh Youths (participated by university students and local NGOs) to incorporate local people's view.

- c) Urgent Rehabilitation & Reconstruction Plan for Banda Aceh City (being undertaken under this Urgent Development Study)

Technical assistance for Urgent Rehabilitation & Reconstruction Plan for Banda Aceh City, design, tender assistance and construction for Quick Impact Project (QIP for Restoration of Human Excrement Treatment Plant) by JICA fund, design and preparation of tender documents for QIPs under Japan's Non-project Type Grant Aid, and establishment of ARRIS (Aceh Rehabilitation and Reconstruction Information System).

- d) Support for Aceh Rehabilitation & Reconstruction Agency/BRR (being undertaken under this Urgent Development Study)

Assignment of two Japanese experts as technical assistance to the Deputy for Planning & Programming of BRR to support planning & monitoring activities.

As social & public services improvement, following projects have been undertaken/being undertaken:

- a) Basic Education (Primary Education) Support (being undertaken)

Support for training of Aceh Besar Regency's education office personnel, people concerned in education (principals, teachers, parents), and local leaders for drafting, examining and evaluating the educational plan as well as and for implementation of the education plan.

- b) Capacity Building of the Government Agencies concerned on Trauma Support (undertaken)

Trauma personnel seminar for the Ministry of Health & Ministry of Education and training for Ministry of Health & Aceh Province Health Office as well as psychiatrists (NGO) and for Aceh province public health center's personnel.

As community rebuilding, following projects are being undertaken as CEP:

- a) Livelihood Support
- b) Post Traumatic Stress Disorder (PTSD) Support
- c) Reconstruction of Water Supply/Sanitation Facilities and Education on Public Health

Community's Capacity Building for Planning and Implementing the Reconstruction as well as Strengthening the Social Capital.

Supports for local economic reconstruction and strengthening of local public administration capacity & capacity building for implementing special autonomy have also been undertaken/being undertaken.

(2) Non-project Type Grant Aid

In response to the request from the GOI represented by BAPPENAS by their letter dated 11 February 2005, GOJ has decided to assist in implementation of the following 13 Quick Impact Projects with a budget of about US\$ 150 million under the Non-project Type Grant Aid:

1. Emergency Relief Goods
2. Urgent Recovery of the West Coast Road between Banda Aceh and Meulaboh Section
3. Recovery of Water Supply and Sanitation System at Affected Areas in Aceh Province
4. Rebuild or Rehabilitate Health Centers
5. Rehabilitate, Rebuild or Expand the Orphanages for Disaster Orphans
6. Support for Universities
7. Selected Emergency Repair Works of the Floodway Dyke in Banda Aceh
8. Support for Rehabilitation of Fishing Activities
9. Support for Rehabilitation of Local Market Places
10. Support for Vocational Training
11. Support for Madrasah/Pesantren (Islamic school)
12. Support for Radio/TV Broadcasting Activities
13. Procurement of Vacuum Freeze Dry Chamber Ext.

3.5.2 UNDP

As an emergency assistance, UNDP made an immediate deployment from the Bureau for Crisis Prevention and Recovery (BCPR) from December 2004.

In Aceh Emergency Response and Transitional Recovery (ERTR) Program, Support by UNDP is being linked into medium-term recovery programming, in order to support an effective transition from immediate emergency relief activities towards sustainable recovery from the crisis. The program provides grant and technical support to enhance the response and recovery efforts of the Government and civil society in Aceh. There are four (4) components in the program as follows:

- (1) Immediate employment and rehabilitation through cash for work
- (2) Recovery of livelihoods
- (3) Recovery of housing, settlements and associated infrastructure
- (4) Capacity-building of Government and civil society for sustainable recovery and risk-reduction

This program has been undertaken through partnerships with local and national Government authorities, national NGOs, civil society groups, the private sector, and international organizations. Implementation of specific activities is undertaken in partnership with UN specialized agencies, including UN Habitat and ILO.

Ulee Lheu, Banda Aceh's main port, would be restored to working order by November 2005 under a new US\$2 million UNDP program, which was the main ferry terminal for the province before the disaster. This restoration plan, developed in partnership with the Provincial Transportation Authority, has been approved by BRR, and funding is being provided by the Australian Government.

3.5.3 UNICEF

UNICEF has been working mainly for three key areas: water and sanitation, child protection, and education. UNICEF has also been providing technical guidance and helps to develop standards in areas as diverse as care for orphans, educational curricula, plans for school buildings, and water and sanitation engineering.

3.5.4 USAID

Since the disaster, USAID and other U.S. Government agencies have worked closely with the Government of Indonesia to provide relief and recovery assistance to those affected.

On April 7, USAID signed a Memoranda of Understanding (MOU) with the City of Banda Aceh to strengthen recovery planning and promote citizen participation in local governance. USAID has assisted the city government and community organizations to develop a city-wide recovery action plan to address immediate priorities and strengthen local capacity to implement the action plan. The program will strengthen the local government public information unit to provide the public with key

information on services and developments, and improve communication with citizens.

At the request of the Mayor of Banda Aceh, USAID and the International Organization for Migration (IOM) launched a market rehabilitation and revitalization program in Banda Aceh. Initial preparation for the construction of the first of 240 temporary market stalls began in May 2005 at Pasar Aceh, which was heavily damaged by the tsunami.

3.5.5 AusAID

Australia's commitment of AU \$1 billion over five years to the Australia-Indonesia Partnership for Reconstruction and Development (AIPRD) was announced on 5 January. The package consists of AU \$500 million in grants and AU \$500 million in concessionary loan over 40 years with no interest and no repayments of principal over the first 10 years. The AIPRD funded programs are as follows as of end of June 2005.

Table 3.5.1 The AIPRD Programs

Amount allocated AU (\$) million	Programs funded
50	Aceh Rehabilitation Program to restore health, hospital and education services
50	Government Partnerships Fund to support governance reform
62	600 Australian Partnership Scholarships
10	Disaster preparedness and response
5	Response to other disasters, e.g. Nias

3.5.6 GTZ

GTZ is executing an emergency relief program in Banda Aceh that will run until year-end 2005. The program provides humanitarian emergency aid and planning support for rebuilding the region in the longer term. GTZ activities are closely networked and coordinated with the German aid organizations and institutions working in Banda Aceh, particularly with Technisches Hilfswerk (THW), the German armed forces, and the Federal Foreign Office.

As most of the aid organizations are active in Banda Aceh and the west coast, in consultation with the provincial authorities, GTZ decided to focus on the northern periphery and the east coast. Its activities concentrate on building so-called Relocation Centers where those who have lost their homes can be accommodated. Out of the 24 Centers GTZ will manage eight.

3.5.7 World Bank

As an immediate response to request for assistance, the World Bank had announced it would provide US\$ 300 million in initial financial support to Indonesia. In late January 2005, the World Bank pledged US\$ 855 million for the 2005 program – US\$ 730 million of this is part of the Bank's regular program of investment and programmatic loans in Indonesia; the remaining US\$ 125 million is targeted to tsunami recovery and reconstruction (this \$ 125 million is part of the original pledge of US\$ 300 million – which was to be spread over 2-3 years).

The Multi-Donor Trust Fund for Aceh and North Sumatra is a pool of at least US\$ 500 million in grant resources provided by donor countries to support the implementation of the Government's rehabilitation and reconstruction blueprint. The Trust Fund is managed by the World Bank and guided by a Steering Committee consisting of donors, Government of Indonesia and civil society representatives, with participation by the United Nations and the international NGO communities.

The four project concepts approved as of June 2005 are:

1. Housing for Thousand Villages (US\$ 150 million) – as part of the Government's larger settlement reconstruction strategy, this two-year program would finance the construction of 20,000 new houses and rehabilitation of 30,000 damaged houses along with related infrastructure in one thousand communities.
2. Recovery of Property Rights (US\$ 28 million) – this project will help to sort out land ownership through urgent recovery of land records, establishment of a land occupancy databases and rehabilitation of the land administration system throughout Aceh (up to 300,000 parcels of land).
3. Community Recovery in Rural Areas (US\$ 54 million) – this addition to the Kecamatan Development Program will support full restoration of community infrastructure in 200 kecamatan (up to 3000 desa), recapitalization of up to 6000 micro-enterprises and training of thousands of villagers.
4. Community Recovery in Urban Areas (US\$ 18 million) – this addition to the Urban Poverty Program will rehabilitate and develop community-based infrastructure in 352 kelurahan through the construction of roads and bridges, schools, water supply and sanitation, community buildings, and drainage.

3.5.8 ADB

In February, ADB established the Asian Tsunami Fund (ATF) with US\$ 600 million of grant resources drawn from ADB's investment income. Further, some US\$ 175 million was identified for reallocation from existing loans. Earthquake and Tsunami Emergency Support Project (ETESP) and Contribution to the Multi-Donor Trust Fund totaling US\$ 300 million (from ATF) were approved on 7 April 2005.

The ETESP will restore essential public services, rebuild infrastructure and promote the resurgence of private economic activity. The ETESP will be carried out in two phases:

The first phase, to be carried out to June 2007, will tackle urgent priorities in disaster management, rehabilitation and reconstruction in some of the less devastated zones. These include health, rural water and sanitation, irrigation and flood control, restoration of roads and bridges, local government capacity building, and spatial planning. The second phase to run until April 2008, will carry out

disaster management and reconstruction activities in the most devastated zones. The work will include expansion of activities under Phase 1, restoration of community infrastructure, spatial redesign of affected zones, power and rural electrification, and public administration.

3.5.9 Other Donors

Other donors have been contributing e.g. through the Multi-Donor Trust Fund for Aceh and North Sumatra. Those donors are the European Commission, the Netherlands, Norway, Denmark, Sweden, Canada and others. As of end of July 2005, the projects of US\$ 250 million were approved. Those include housing (“Housing for a Thousand Villages”, US\$ 150 million), land rights (“Recovery of Property Rights”, US\$ 28 million), and community facilities (“Community Recovery in Rural Areas”, US\$ 54 million and “Community Recovery in Urban Areas”, US\$ 18 million).

For the individual donors’ contributions – e.g. Turkey is assisting through the NGOs (e.g. Turkish Red Crescent) and humanitarian aid. The British DFID (Department for International Development) supports drinkable water and sanitation (e.g. by funding local company *Soutraco* to manage water treatment plant in Banda Aceh), economic livelihoods (e.g. by funding the activities of the Dutch NGO ZOA), or children (e.g. by funding the activities of the International NGO Save the Children).

3.6 ACTIVITIES BY NGOS

3.6.1 International NGOs

Before December 2004 there were only a few International NGOs (INGOs) present in Aceh. The initial response to the disaster was a huge influx of humanitarian aid, including about 300 INGOs. The vast majority of INGOs have plans for further work on the rehabilitation and reconstruction. However, the strategy of most of the INGOs is temporary.

The HIC (UN Human Information Centre) has been making an attempt to overview the activities of the organizations other than GOI providing with the database “Who does What Where”. The database focuses mostly on the geographical presence, and activities within the sectors.

Table 3.6.1 below lists some major INGOs and their basic activities.

Table 3.6.1 Activities of Major INGOs (As of end of July 2005)

INGO	Activities
IFRC	International Federation of Red Cross and Red Crescent Societies Expected funding of US\$ 410 million, active in agriculture & fisheries, coordination, education, food, health, infrastructure rehabilitation, shelter, non-food items, protection, water, sanitation, livelihood. In July, Red Cross Indonesia (PMI) in cooperation with the IFRC submitted a list of 105 projects to BRR in Banda Aceh. The projects would take 2-5 years to complete, and include the construction of 89 schools, 20 PMI branch offices, 4 orphanages, 31,088 new houses and the rehabilitation of 7,206 houses for IDPs.
IRD	International Relief and Development Expected funding of US\$ 8 million (by the USAID, Save the Children and UNDP); active in agriculture & fisheries, water, sanitation and livelihood.

OXFAM	Active in agriculture & fisheries, coordination, education, protection, water, sanitation and livelihood. In housing, until July, Oxfam has supported over 300,000 beneficiaries and is building houses in Aceh Besar, Lamno, Meulaboh, Lhokseumawe, Calang, and Nias; it covers remote rural areas, easy to be left behind in the reconstruction process. Assistance includes also the cash-for-work projects to help farmers clear ruined rice crop and by supplying salt-tolerant seeds and construction of permanent houses.
World Vision	Expected funding of US\$ 12 million from own resources; active in agriculture & fisheries, education, shelter, water, sanitation and livelihood.
CARE International	Expected funding of US\$ 125 million; active in food, health, shelter, non-food items and livelihood.
Mercy Corps	Provision of water, sanitation, health care, shelter, household items, food, infrastructure rehabilitation, livelihood assistance and trauma counseling for 150,000 beneficiaries (including 75,000 women and 90,000 children).

Source: "Who does What Where" by HIC; JICA Study Team meetings, other sources.

According to the available information most of the INGOs concentrate on the activities related to shelter provision, which can be associated with the "grass-root development" of the communities in the future. The INGOs most active in the permanent housing construction are OXFAM, and World Vision.

3.6.2 Local NGOs

According to the "Directory of the Local NGOs in Aceh (mapping as of end of February 2005)", there are about 200 Indonesian NGOs active in Aceh after the disaster. The Directory gives the information on the activities (before and after tsunami), partners, and capacity (in terms of staff and equipment).

The Aceh local NGOs suffered from the tsunami damage. 27 % of the NGOs lost their own staff and 25 % of their offices, which were totally destroyed or badly damaged. The local NGOs in most of the cases adjusted their original activities to the disaster response. Many of the local NGOs lost strategic partners, equipment, documents, etc.

There are local NGO forum/consortiums existing around the issues of human rights, environment, gender, community mobilization/monitoring, and community based organizations. They are formal entities with membership and consider the development of a larger Acehese consortium representing civil society. There are four local NGO consortiums in Aceh with combined membership of 150 NGOs; the most active are Forum LSM Aceh and Wahli, as in the table below:

Table 3.6.2 Forums of Local NGOs

Forum	Activities
Forum LSM Aceh	Forum for 78 member NGOs on democracy/civil society/community development issues; shifted to relief aid after tsunami; plan to be active in recovery monitoring and support for members.
Wahli	Forum for 34 member NGOs on environment issues.

Source: "Directory of Local NGOs in Aceh"; JICA Study Team meetings.

The other large organizations have typical sectoral specializations: environment, humanitarian

assistance, human rights, water and sanitation, farming and reproductive health.

The local authorities have mandated that all villages must be the focal point for NGO assistance, including the village mapping.

By the end of July 2005, YIPD (Yayasan Inovasi Pemerintahan Daerah) in cooperation with the Syiah Kuala University, has completed land inventory and mapping in the most hit sub-districts of Banda Aceh city (particularly Meuraxa, Kuta Raja, Jaya Baru, Lhoknga). Other related activities of the YIPD include (i) renting temporary kecamatan office, community centre, etc., (ii) arrangement for basic information system, (iii) support for local economic development.

3.7 SUMMARY OF ASSISTANCE AND HELP FOR BANDA ACEH CITY

The Government of Indonesia established “The Rehabilitation and Reconstruction Agency (Badan Rehabilitasi dan Rekonstruksi-BRR)” for Aceh and Nias in April 16, 2005, and its mandate is defined by Regulation in Lien of Law (Perpu) No. 2/2005 issued by the President of the Republic of Indonesia.

Role of BRR centers on coordinating the reconstruction of Aceh and Nias with transparency, accountability, and speed. All the assistance and help by NGOs, bi-lateral and multi-lateral donors are coordinated by BRR.

As of July 2005, BRR has approved 416 projects, amounting US\$ 1,675 million for Aceh and Nias. Out of these, 57 projects worth US\$ 228 million concentrates on Banda Aceh City as shown in Table 3.7.1.

Table 3.7.1 List of Projects Approved by BRR

(as of July 2005)

Project Name	Sector	Donors	Related Agency	Budget estimate (in US\$)
1. Ulee Lheu Port Rehabilitation.	Infrastructure	Australia	UNDP, AUSAID	2,000,000
2. IOM Technical Co-operation on Migration	Institutional	Australia	Government of Australia	229,008
			sub-total	2,229,008
3. Private Enterprise Participation (PEP) Implementation I Project-Approved	Economy	Canada	CIDA	2,425,500
4. IAIN-Indonesia Social Equity Project (HISEP)-Approved	Education	Canada	CIDA	2,385,075
			sub-total	4,810,575
5. Rehabilitation of part of the SMKN2 Banda Aceh	Education	French	French Government	1,091,763
6. Twinning of Pediatric Departments of Zainal Abidin Hospital in Banda Aceh and Centre Hospitalo Universitaire of Lille (France)	Health	French	French Government	-
7. Rehabilitation of Lambaro Water Treatment Plant	Infrastructure	French	French Government	4,141,170
			sub-total	5,232,933
8. Rehabilitation and Reconstruction of Zainoel Abidin Hospital Banda Aceh (Joint FC/TC)	Health	Germany	BMZ (GTZ, KfW)	16,313,700
9. AIPRD Aceh Rehabilitation Program: Hospital Restoration	Health	Germany	German Government	7,573,000
			sub-total	23,886,700
10. Restoration and Enhancement of Unsyiah Academic and Research Capacity	Education	Japan	JICA	-
11. Internet Base Learning Support System for Unsyiah	Education	Japan	JICA	-
12. Support for Universities	Education	Japan	Japan Fund (JICS)	1,962,300
13. Sanitatin and Park Department. Banda Aceh Municipality	Infrastructure	Japan	JICA	866,000
14. Selected Emergency Repair Work of Flood Way Dyke in Banda Aceh	Infrastructure	Japan	Japan Fund (JICS)	10,022,500
15. Water supply and sanitation	Infrastructure	Japan	Japan Fund (JICS)	9,495,000
16. Land Document Recovery	Institutional	Japan	Japan Fund (JICS)	828,590
17. Support for Radio/TV Broadcasting Activities	Institutional	Japan	Japan Fund (JICS)	8,900,000
18. Rehabilitation and Reconstruction Orphanages	Social	Japan	Japan Fund (JICS)	3,692,500
19. The Study on The Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City (URRP)	T.A.	Japan	JICA	866,000
			sub-total	36,632,890
20. Education Material Re-Supply	Education	UK	Disaster Emergency Committee (UK)	470,588
			sub-total	470,588
21. Aceh Recovery and Reconstruction Program	Economy	USA	United States Agency for International Development	1,238,560
22. Psychological Recovery Program in Aceh	Health	USA	USAID	4,583,760
23. Aceh Community Empowerment Program	Institutional	USA	USAID	37,500,000
			sub-total	43,322,320
24. Rebuilding Higher Education in Aceh	Education	Multilateral	MDTF	6,666,667
25. Peace Brigades International Indonesia Project Yayasan Bina Perdamaian Internasional Indonesia	Institutional	Multilateral	MDTF	1,662,899
			sub-total	8,329,566
26. Banda Aceh Fishing Market Vitalization	Economy	others	CRS	1,145,000
27. Repair shop	Economy	others	CRWRC	6,763
28. Build 17 Becaks	Economy	others	CRWRC	21,268
29. Doy River Cleaning	Economy	others	CRWRC	31,504
30. Grant Agreement with Panglima Laot for the Rehabilitation of the Lamnyong Market.	Economy	others	DLA Piper-Rudnick	44,000
31. Lampulo Market Reconstruction	Economy	others	Americare	345,000
32. (no project name)	Economy	others	DLA Piper-Rudnick	8,300
33. Penayong Market Reconstruction	Economy	others	AIG	525,000
34. Rehabilitation of the Library Badan Perpustakaan	Education	others	German Donor Community	171,561
35. Rehabilitation/Reconstruction TK Bhayangkari	Education	others	German Donor Community	328,159
36. Rehabilitation/Reconstruction SDN97 Lamtemen Timur	Education	others	German Donor Community	87,843
37. Universitas Muhammadiyah Aceh, Rehabilitation and reconstruction	Education	others	European Donors	83,936,000
38. Building Rehabilitation/ Construction at SMP17 school in Ulee Lheue , Banda Aceh	Education	others	HOPE International	18,507
39. Tibang School Project	Education	others	Allianz	263,529
40. Womens & Childrens Hospital, Banda Aceh	Health	others	CRS	1,945,000
41. Rehabilitation of the General Hospital	Health	others	German Donor Community	1,254,900
42. Rumah Sakit Zainal Abidin – Orthopedic Ward	Health	others	NGO (Malaysia)	92,120
43. PUSKESMAS(I) – Jaya Baru	Health	others	NGO (Malaysia)	329,000
44. PUSKESMAS(II) – Jaya Baru	Health	others	NGO (Malaysia)	197,400
45. Akedemi Farmasi	Health	others	NGO (Malaysia)	184,240
46. Akademi Perawat	Health	others	NGO (Malaysia)	92,120
47. Akademi Perawat	Health	others	NGO (Malaysia)	263,200
48. Support to the provincial health system for the medicines and medical supply management in Aceh Province	Health	others	ECHO	550,474
49. Meuraxa Hospital Clinical Equipment and Training Support	Health	others	Project HOPE and its donors	200,000
50. Banda Aceh/Aceh Besar: Health Hardware	Health	others	World Vision Private Donors	750,000
51. Building to house 4 Labs	Infrastructure	others	Private Donors	158,250
52. Rehabilitation of the City Council	Infrastructure	others	German Donor Community	392,167
53. Rehabilitation of wells	Infrastructure	others	German Donor Community	76,217
54. Reconstruction & Rehabilitation Buildings, at Dept of Agriculture Dinas Perkebunan	Infrastructure	others	HOPE International	19,670
55. Waste Management Banda Aceh	Infrastructure	others	TBA	9,200,000
56. Rehabilitation of the Civil Security / Fire Department of Banda Aceh	Institutional	others	NGO	376,470
57. Babun Najah - Orphanage	Social	others	NGO (Malaysia)	131,600
			sub-total	103,145,262
			TOTAL	228,059,842

Source: e-aceh, <http://www.e-aceh.org/>

CHAPTER 4 URGENT CITY REHABILITATION AND RECONSTRUCTION PLAN

4.1 INTRODUCTION

This chapter presents urgent city rehabilitation and reconstruction plan for Banda Aceh City. As reported in Chapter 2 of this report, the earthquake and tsunami did tremendous damages on infrastructure, housing and economic and administrative activities, caused geographic changes in administrative area, and killed a large number of people. For people of Aceh, Banda Aceh City is not only center of administrative services but is important economic, cultural and educational center. Accordingly it is the most important among rehabilitation and reconstruction plan how to re-build the Banda Aceh City with a systematic preparedness against future potential disaster and incorporating willingness of Acehnese people.

It is presumed that the rehabilitation and reconstruction of Banda Aceh City would implicate various issues/difficulties in the process of planning and implementation as experienced in reconstruction works in Kobe City in Japan, which underwent very serious earthquake damage in 1995.

In this chapter, the city development plan is elaborated keeping in mind visions and goals set forth in the Blueprint, geographic characteristics, disaster preparedness, and actual implementation of city development at village level. The city development plan therefore covers the following aspects and plans:

- (1) Population forecast and distribution in the city
- (2) Formulation of city development plan
- (3) Zoning and land use plan
- (4) Road framework plan
- (5) Housing development plan
- (6) Disaster preparedness
- (7) General approach to village planning
- (8) General approach to micro plan
- (9) Case study for micro planning

Of the above studies and planning, general approach to village planning, general approach to micro plan, and case study for micro planning are elaborated in order to introduce how to harmonize top-down and bottom-down approaches and coordinate various development at village level. The

JICA Study Team wishes that these outputs could be used as one of guidelines for planning and implementation in the later stage.

4.2 VISION AND STRATEGY

The Government of Indonesia promulgates the following three (3) visions in its Blueprint:

- Vision 1 Aceh Society** : The plan must take full account of the social impact to Acehnese community pursued through Islamic values.
- Vision 2 People-centered** : The plan should be people-centered in the context of the Unitary State. Basic needs for community development are top priorities.
- Vision 3 Universal Perspective** : The plan should harmonize and cooperate with international society.

Planning strategies to realize the advanced, fair, safe, peaceful and prosperous Acehnese community include:

- (1) Disaster Mitigation : Overcoming future damage due to natural disasters ensures to accelerate growth of tsunami-affected community. The comprehensive measures should be introduced in the most effective manner with people's participatory. GIS database should be shared for the people's better understanding.
- (2) Harmonious Society : Better quality environment for the tsunami-affected community needs to be deliberately pursued through the involvement of tsunami-affected people. Bureaucratic competence at every level of the local government should be also emphasized.
- (3) Reconstruction : Greater efforts to provide sustainable infrastructure should be made for generation of income and employment of tsunami-affected people by means of fostering private sector and non-government organizations.

4.3 POINTS AT ISSUE

4.3.1 Under Pre-Disaster Condition

(1) Economic activity

As reported in Chapter 1 of this report, despite the improved economic performance in Indonesia, the economic development in Banda Aceh City is still behind its population growth, resulting in a low level of per capita real income. The incidence of poverty and unemployment was still very high. There was need to accelerated growth in order to improve welfare of the people even before disaster.

Per capita GRDP (2002) of Banda Aceh City (excluding oil and natural gas product) was estimated at Rp.3,325,000 (US\$ 350) which was almost half of national average of US\$ 710. Several key problems impeding growth have been identified; namely, (i) insufficient private sector development, (ii) weak basic infrastructure, (iii) lack of export commodity diversification, and (iv) high incidence of poverty.

(2) Infrastructure

The Banda Aceh City was provided with road, maritime and air transport facilities. The transport system in the city has traditionally played an important catalyst role to the development of the Province of Aceh as well as providing both a transit link connecting the eastern parts along Malacca Strait with the western part along the Indian Ocean, and a maritime transport links among several islands located at north offshore of Sumatra Island. However, there was a serious bottleneck in transport capacity since the transport system depends largely on a national road which traverses and wound in the densely populated area of the City.

The city area has extended mainly towards the north from the national road which induced the damage due to natural disaster generated by sea water and mal-functioning of drainage, although the local government has a long-term plan comprising of (i) establishment of new city center southward and (ii) new sub-centers as satellite business districts scattered around new city center. The network of infrastructure such as sewerage and urban drainage was incomplete even at the city center where had been experiencing shallow flooding when heavy rain occurred.

(3) Disaster Preparedness

The road network enabling to access to disaster area from dual-direction, such as peripheral roads around the city and the north-south roads traversing city center, was incomplete. In case of emergency, the national road was used to be major trunk road for evacuation and relief activities. Neither local government units nor citizens had enough knowledge about disaster preparedness against natural disasters.

4.3.2 Under Pos-Disaster Condition

Several key problems impeding restoration of pre-disaster social and environmental conditions are identified. The post-disaster state of infrastructure requires special attention as it poses a major problems for rehabilitation and reconstruction of the Banda Aceh City.

(1) Loss of Economic Basis

The loss of assets was estimated at Rp.4.5 billion, which is equivalent to 75 % annual GRDP in NAD. In the Banda Aceh City, the basis for economic development, such as commercial activities, basic infrastructure and human resources was seriously damaged.

It is therefore imperative that the Government implements policies and reforms that accelerate economic growth on a sustainable basis, and generate productive employment to absorb existing and increasing labor force. Also, there is need to solicit financial assistance from external sources to finance programs and projects geared towards a sustainable income to affected people.

Expansion of rehabilitation activities is hampered, particularly re-housing for dislocated families in coastal area where the most serious damage occurred.

(2) Land Subsidence

Land subsidence, sinking or depression of the land surface in the coastal area is an issue for formulating housing plan. Especially in the coastal area, many dislocated families wish to return their homeland. It is noted that the road network would be realigned and housing area would be re-organized taking into account geographic conditions and the tidal effects during high tide.

(3) Capacity of Local Government Unit (LGU)

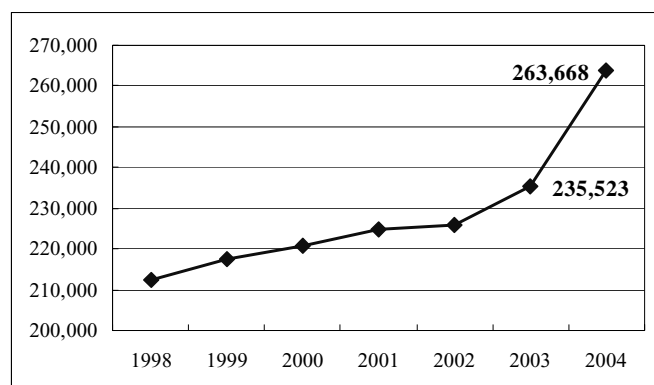
The loss of a large number of competent staff has resulted in degradation of administrative capability of local government units and accordingly leads to insufficient maintenance towards rehabilitation and upgrading of damaged basic infrastructure, administration of IDs, land titles, etc.

Although the local government units are trying to manage to resume pre-disaster social and economic activities, the need for economic development and income generation is most critical. Besides, the loss of many documents related to land ownership and family register and the non-existence of the nation disaster act or relief act are exaggerated the delay of rehabilitation and reconstruction activities.

4.4 POPULATION FORECAST

4.4.1 Population Forecast

The trend of population of Banda Aceh City during the period from 1995 to 2004 is shown in Figure 4.4.1. The population was 263,668 in 2004. The steep increase between 2003 and 2004 was mainly attributed to migrant from the surrounding areas due to the civil conflict.



Source: BANDA ACEH DALAM ANGKA, 2004, BPS
Figure 4.4.1 Population of Banda Aceh City

The population forecast was attempted by the following three (3) methods:

Method 1: Extrapolation of average growth rate

The growth between 2003 and 2004 was unusually large due to inflow from the surrounding areas. The future population is based on the average growth rate (2.1 %) between 1998 and 2003.					
2005.4.12	2005	2006	2007	2008	2009
192,194	196,230	200,351	204,558	208,854	213,240

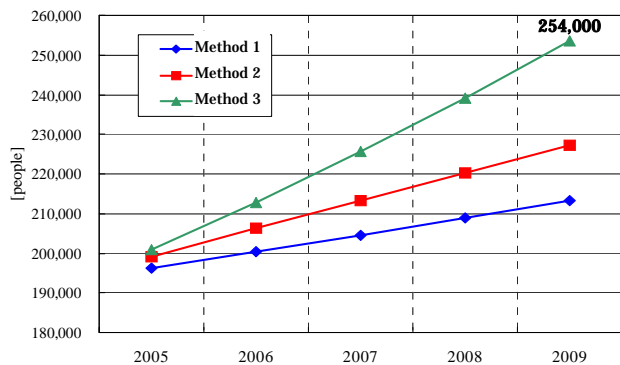
Method 2: Regression method

From the data between 1995 and 2004, the following regression formula is developed: $Y = -14,211,050 + 7,216.14 * X$ ($r = 0.88$)					
2005.4.12	2005	2006	2007	2008	2009
192,194	199,194	206,194	213,194	220,194	227,194

Method 3: Annual growth rate with a special growth

There were a lot of examples and experiences that population steeply increased after calamity with large number of victims, due to social increase of reconstruction work and sharp natural growth. The World Bank adopted the annual growth rate of 6 % for population projection of Indonesia.					
2005.4.12	2005	2006	2007	2008	2009
192,194	200,843	212,893	225,667	239,206	253,559

The method 3 is determined to be most adaptable to the situation of Banda Aceh City. The population in 2009 is projected at 254,000.



Source: JICA Study Team

Figure 4.4.2 Population Projection

4.4.2 Population Distribution

For the purpose of planning of housing requirement and infrastructure development within the city area, it is necessary to grasp as accurately as possible population distribution within the city. Population distribution in the year 2009 is forecasted for each village (desa) and then district (kecamatan) based on the proposed future city development plan (refer to Section 4.5 of this report) and under the following method:

(1) Natural Growth

From statistical analysis over 10 years including birth rate and surviving rate of each age group, the average natural growth rate is estimated at a constant of 0.3 % per year. This growth rate is applied to each desa.

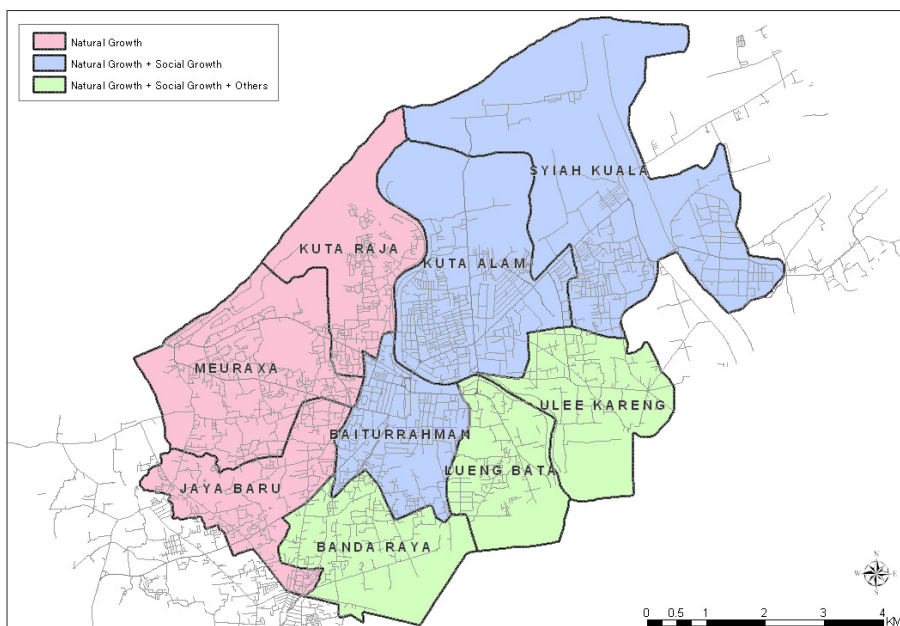
(2) Social Growth

Social growth is attributable to migrants and is a difference the gross population increase deducted by the projected population by natural growth rate (estimated to be approximately 0.9 %). This growth rate is adopted for 6 kecamatan (Baiturrahman, Kuta Alam, Syiah Kuala, Banda Raya, Lueng Bata and Ulee Kareng).

(3) Special Growth

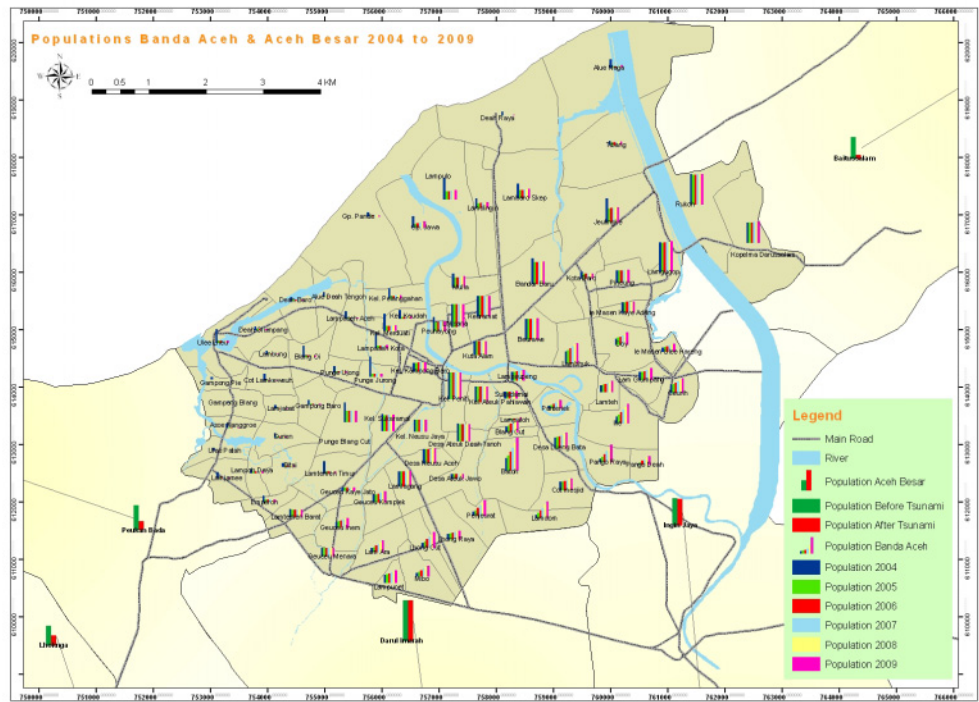
Special growth is due to expansion of housing area. Accordingly this growth is applicable to three (3) southern kecamatan (Banda Raya, Lueng Bata and Ulee Kareng).

Figure 4.4.3 presents the application pattern of those three (3) growth rate among 9 kecamatan and Figure 4.4.4 the forecast population distribution.



Source: JICA Study Team

Figure 4.4.3 Application of Population Growth by Kecamatan



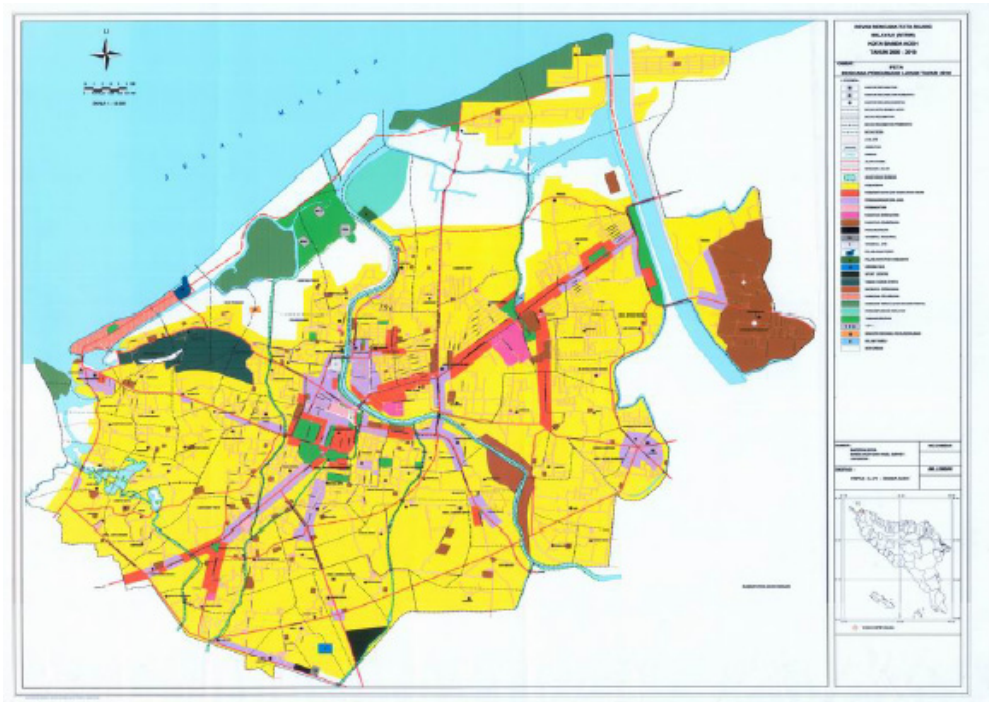
Source: JICA Study Team

Figure 4.4.4 Forecast Population Distribution (2005-2009)

4.5 FORMULATION OF CITY DEVELOPMENT PLAN

4.5.1 Existing City Master Plan

The Banda Aceh City administration established its City Master Plan (2001-2010) in March 2001. It is of multi-core type with linear growth along the major roads as shown in Figure 4.5.1.



Source: Banda Aceh City, 2001

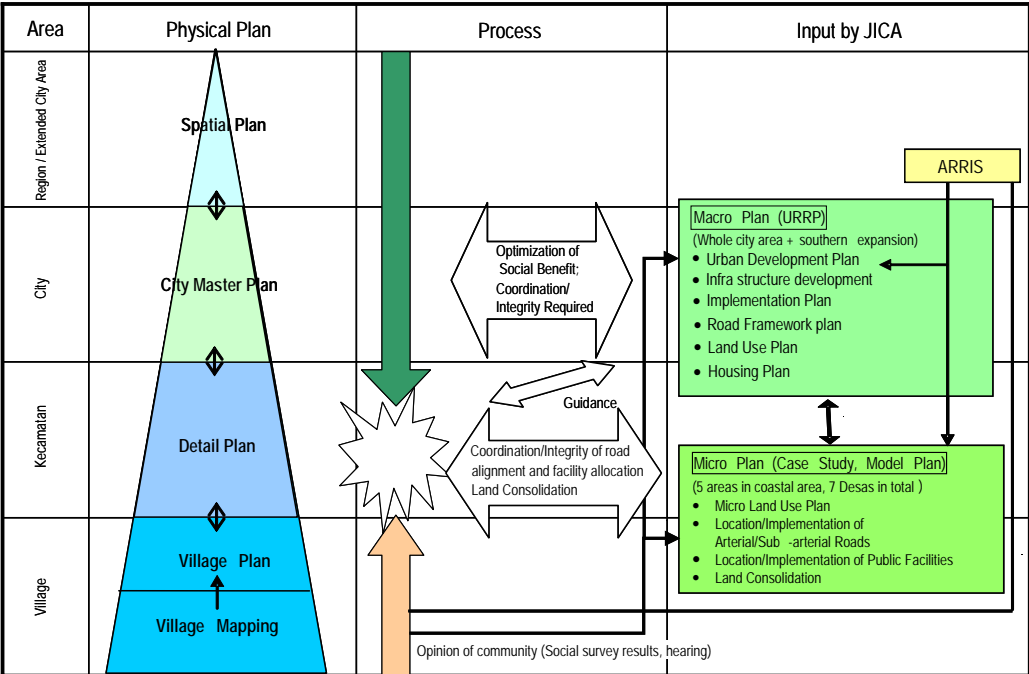
Figure 4.5.1 Land Use Plan (City Master Plan 2001-2010)

This city plan focuses on; (i) harmonizing and optimizing land use, (ii) providing infrastructure and facilities properly, (iii) providing efficient transport system, and (iv) improving environmental quality as well as preservation. According to the plan, the population and its density are projected at 307,695 and 52 people per ha respectively in the year 2010. The number of households is forecasted at 61,539 based on the average family size of 5.

The city administration unfortunately abandoned the implementation of this plan because of disaster.

4.5.2 Structure of City Development Plan

Normally physical plan of city comprises several associating plans. Hierarchy in the current case is depicted as shown in Figure 4.5.2.



Source: JICA Study Team

Figure 4.5.2 Structure of City Development Plan of Banda Aceh City

The spatial plan set in the Blueprint covers a wide area not only Banda Aceh City but its surrounding area and is being deemed to be guideline, subject to modify in due time depending on change in circumstances. The village plan at the bottom is in general oriented by the community concerned with participation of village people. It is absolutely necessary to coordinate and harmonize the spatial/urban plan with the village plan to constitute amenity and efficient urban development, most of the cases at level of Micro plan.

At the time of preparation of this study, village plan was not made available, though public meeting has started at several villages. It should be noted that it would take a long period to set up village plan in some villages as their land title documents had been damaged by tsunami. In such case it is prerequisite to prepare village map first of all.