

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NATIONAL DEVELOPMENT PLANNING AGENCY (BAPPENAS)
PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM

THE STUDY
ON
THE URGENT REHABILITATION AND RECONSTRUCTION
SUPPORT PROGRAM
FOR
ACEH PROVINCE AND AFFECTED AREAS
IN NORTH SUMATRA

(URGENT REHABILITATION AND RECONSTRUCTION PLAN FOR
BANDA ACEH CITY)

IN THE REPUBLIC OF INDONESIA

FINAL REPORT (1)

VOLUME II : MAIN REPORT

SEPTEMBER 2005

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P A S C O C O R P O R A T I O N

LIST OF REPORTS

VOLUME I	:	EXECUTIVE SUMMARY
VOLUME II	:	MAIN REPORT
VOLUME III	:	APPENDICES
VOLUME IV	:	DATA BOOK

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PREFACE

In response to a request from the Government of Indonesia, the Government of Japan decided to conduct a “Study on the Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City in the Republic of Indonesia” and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Akira Takahashi of Nippon Koei Co., Ltd. in association with Yachiyo Engineering Co., Ltd., and Pasco Corporation, to Indonesia from March 2005 to September 2005.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study area. Upon returning to Japan, the team prepared this final report.

I hope this report will contribute to the people of Aceh and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the study.

September 2005

Sadako Ogata
President
Japan International Cooperation Agency

Ms. Sadako Ogata
President
Japan International Cooperation Agency
Tokyo, Japan

Subject: Letter of Transmittal

Dear Madam,

We are pleased to submit herewith the Final Report (1) of the “Study on the Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City in the Republic of Indonesia”. This Study was conducted by Nippon Koei Co., Ltd., in association with Yachiyo Engineering Co., Ltd., and Pasco Corporation, under a contract to JICA, during the period from March 2005 to September 2005. The report consists of Volume I: Executive Summary, Volume II: Main Report, Volume III: Appendices and Volume IV: Data Book.

The report presents recommendations for the Plan to restore pre-tsunami social and environmental conditions of the Banda Aceh City and to establish the city plan with the disaster preparedness for future development of the Banda Aceh City

We would like to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs. We are also most grateful for the cooperation and assistance from the officials concerned in the Republic of Indonesia, the JICA Indonesia office, and the Embassy of Japan in Jakarta. The Final Report is a fruit of excellent collaboration of all participants in this Study.

Yours Faithfully

Akira Takahashi
Team Leader, JICA Study Team
The Study on the Urgent Rehabilitation and Reconstruction Plan
for Banda Aceh City
in the Republic of Indonesia



Source: JICA Study Team

Location Map of Banda Aceh City

PHOTOGRAPHS



Collapsed Building



Devastated Village



Camp for Dislocated People



Emergency Restoration



Typical Urban Sprawl in Banda Aceh City
before Disaster



Public Consultation

CONCLUSIONS AND RECOMMENDATIONS

BACKGROUND

- (1) The Nanggroe Aceh Darussalam (NAD) and North Sumatra Provinces were struck by a powerful earthquake with magnitude of 9.0 and a huge tsunami after 15 minutes of the earthquake on December 26, 2004. This calamity caused casualties of more than 200,000 people and various damages amounting to approximately US\$ 4,450 million.
- (2) The Government of Indonesia has moved promptly and the President issued a Presidential Decree on December 27, 2004 declaring that the earthquake and tsunami wave are the natural disaster and directed the government agencies and organizations concerned to act immediately and comprehensively in the emergency response handling of the natural disaster through issuing 12 directives.
- (3) BAPPENAS was appointed to prepare “The Master Plan for Rehabilitation and Reconstruction for Aceh Region and Nias” (called “Blueprint”) for the people of Aceh and North Sumatra within three (3) months in coordination among the government line agencies, donors, local governments and NGOs. BAPPENAS published “Blueprint” in March 2005. The Blueprint indeed covers various aspects necessary for rehabilitation and reconstruction of the affected areas, and sets to implement the established plan in integrated approach in three (3) stages: Emergency Relief Stage (initial 3 months), Rehabilitation Stage (after 3 months to 2006), Reconstruction Stage (2007 to 2009).
- (4) The Japanese Government decided to render various support and assistance to the damaged area. The Japan International Cooperation Agency (JICA) dispatched its Project Formulation Mission in January 2005 to Indonesia in accordance with the request of the GOJ. As a result, JICA decided to implement “The Study on the Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City” (The Study) under agreement with BAPPENAS.

THE STUDY

- (5) The objectives of the Study are: (i) Formulation of Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City with a target year 2009, (ii) Designing, Cost Estimation and Monitoring of Quick Impact Projects, and (iii) Establishment of Aceh Rehabilitation and Reconstruction Information System (ARRIS).
- (6) The ARRIS aims at producing digital topographic maps in a scale of 1 to 2,000 covering Banda Aceh City areas, and establishing an information system to be able to share among stakeholders in order to facilitate the contemplated rehabilitation and reconstruction works.

- (7) The study was commenced from March 2005 and continues to March 2006. The outputs of the objective (i) above are scheduled to be completed by the end of August 2005. This final report (1) is one of the outputs of the objective (i).

THE STUDY AREA

- (8) The Study Area covers the entire administrative area of Banda Aceh City (approximately 61 km²) and its surroundings. The Banda Aceh City is the capital of NAD and is also center of commerce, education and culture of the province. The city comprises 9 kecamatan (districts): Meuraxa, Baiturrahman, Kuta Alam, Ulee Kareng, Jaya Baru, Banda Raya, Leung Bata, Syiah Kuala, and Kuta Raja.
- (9) The city faces to the Strait of Malacca on its north. Its topography is characterized by very flat with average elevation around two (2) meters above sea level.
- (10) The city had population of 263,668 in December 2004, of which nearly 73,400 or 28 % were resided in Meuraxa, Jaya Baru and Kuta Raja kecamatan, most affected areas within the city. These 3 kecamatan are located on the coast. The average population growth rate before disaster was 2.1 % per annum during the period from 1998 and 2004.
- (11) Most predominant land use before disaster was presumed to be residential/commercial area, more than 30 % of the entire city area, followed by swamp/open water, most of which was used to be fish ponds, one of main economic activities.
- (12) GRDP per capita of Banda Aceh City was US \$ 350 approximately in 2002, being about a half of the national average (US\$ 710). Main economic activities are commerce and fish cultivation, but the latter was almost completely destroyed by tsunami.

OUTLINES OF DISASTER DAMAGES

- (13) The earthquake on December 26, 2004 was recorded as the third largest in the world, and a number of aftershock also occurred. The tsunami was approximately 10 m in height at northern coastline of the city, resulting in devastating the area in about two (2) km wide along the coast.
- (14) Within Banda Aceh City, human casualties reached 71,474 as of April 12, 2005, corresponding to 27 % of the whole population before disaster. The most affected areas are Mueraxa, Kuta Raja and Jaya Baru, and casualties in these kecamatan accounted for 72 % of the whole casualties. The casualty rates in Meuraxa and Kuta Raja kecamatan are surprisingly high, 80 and 75 %, respectively.
- (15) It should be noted a large extent of land area remained submerged, partly owing to subsidence of land after the earthquake and mainly owing to washing out/destroy of floodwalls and dykes along the main rivers.

- (16) There are a large number of dislocated families. It is reported to be approximately 65,500, 37 % of which is from Kuta Alam kecamatan.
- (17) Almost all houses and buildings in a 2 km wide coastal area are completely destroyed and/or damaged. In that particular area there were 25,688 houses/buildings, of which 12,972 were entirely and/or partly collapsed.
- (18) Road network damage is also very remarkable in three (3) kecamatan; 98 % in Meuraxa, 67 % in Jaya Baru and 86 % in Kuta Raja. Out of 54 existing bridges in the city, 13 bridges were damaged including 4 fallen down bridges. Ferry terminal, serving to Sabang Island was completely destroyed. The distribution network of potable water supply was also seriously damaged, especially in tsunami inundated areas.

SUMMARY OF RELIEF, REHABILITATION AND RECONSTRUCTION ACTIVITIES

- (19) Soon after the disaster, the government, bi- and multi-donors and NGOs moved in to extend various relief, assistance and help for people of the affected area. Such assistance is now coordinated by “The Rehabilitation and Reconstruction Agency (Badan Rehabilitasi dan Rekonstruksi: BRR)”, which was established in April 2005 by Regulation in Lieu of Law No. 2/2005 by the President of the Republic of Indonesia. According to the database of BRR, up to July 2005, BRR has approved 57 projects in Banda Aceh City with estimated amount of US\$ 228 million which were offered by the various donors and NGOs.

VISION AND STRATEGIES FOR REHABILITATION AND RECONSTRUCTION PLAN

- (20) Vision and strategies set forth in the Blueprint are deemed to be appropriate and adopted also in the Study.

Vision:

- ▶ Aceh Society ; Plan must take full account of the social impact to Acehnese community pursued through Islamic values.
- ▶ People-centered ; Plan should be people-centered in the context of Unitary Society. Basic need for community is top priority.
- ▶ Universal perspective ; Plan should harmonize and cooperate with international society.

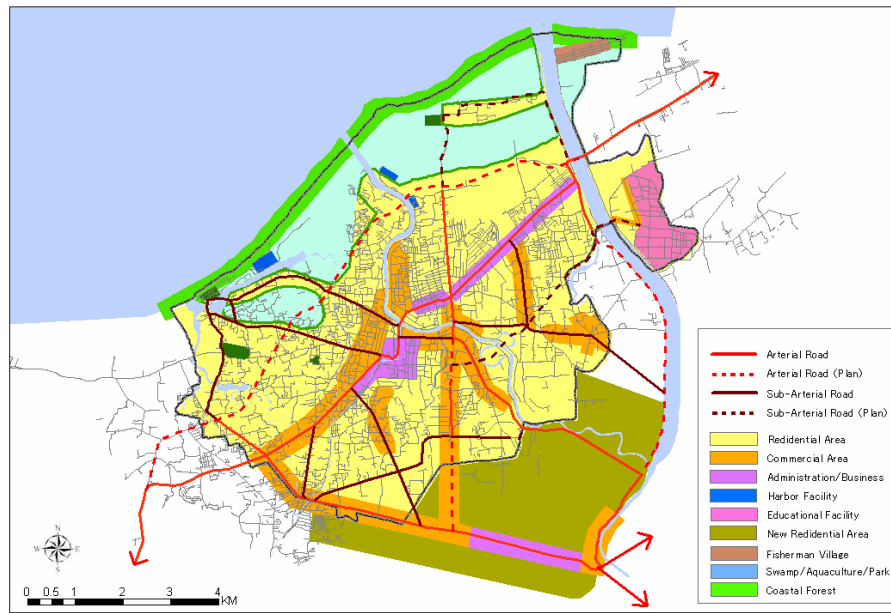
Strategies:

- ▶ Disaster Mitigation ; Comprehensive measures in most effective manner with participation of the people and overcoming future damage.

- ▶ Harmonious Society ; Involvement of disaster affected people for creation of better quality of life and emphasis on strengthening of local government units at all levels.
- ▶ Reconstruction ; Sustainable infrastructure development and increase of opportunity of disaster affected people by means of fostering private sector and non-government organizations.

CITY DEVELOPMENT PLAN

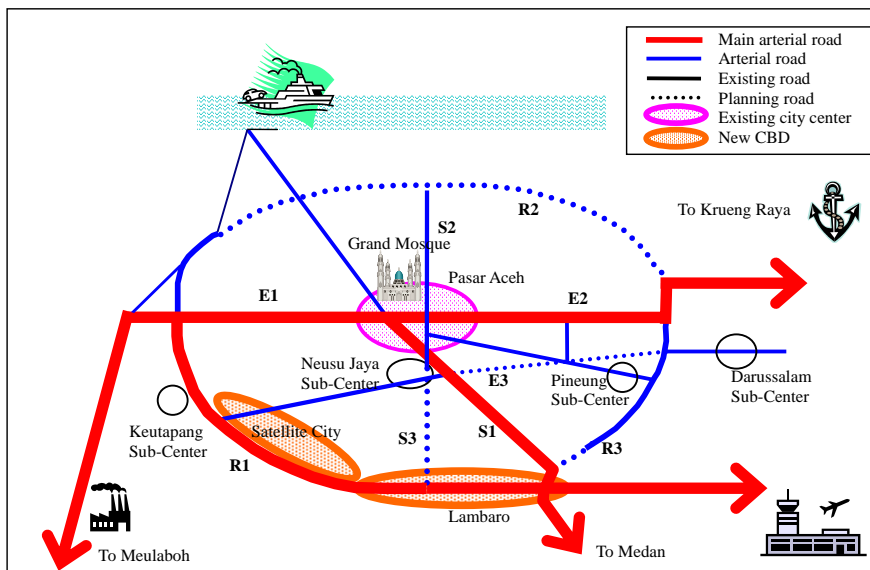
- (21) For the purpose of the city development planning, five (5) conceivable city development models are examined and compared. As a result, Linked Multi Center with Multi Residential Area is judged most feasible and adaptable for re-building of the Banda Aceh City from the various points of view such as amenity in urban environment, opportunity of future commercial and administrative development, disaster preparedness, and efficiency in road traffic. Based on the selected model, urban development concept is developed, in which urban functions are allocated with mutual linkage and network. New administration center and residential area are proposed to be located in the south area to cope with increasing population and potential future disaster.
- (22) The city area is proposed to be classified into four (4) zones with keen attention against disaster preparedness; (i) Coastal Zone, (ii) Eco Zone: Evacuate Area, (iii) Traditional City Center Zone: Escape Guiding Area, and (iv) Urban Development Zone: Emergency Base - Disaster Mitigation Center. The land use plan is prepared based on the proposed urban development concept, proposed zoning and in due consideration of the present land use pattern and usable land after the disaster. Details of land use are indicated in broad land use category such as (i) Residential, (ii) Commercial, (iii) Culture/Education, Business and Administration, (iv) Coastal, and (v) Park and Open Space. For zoning and planning, ARRIS (Aceh Rehabilitation and Reconstruction Information System) is fully utilized as an effective tool.



Source: JICA Study Team

Figure 1 Land Use Plan of Banda Aceh City

(23) In accordance with the new urban development concept and knowing the present traffic situation in the city, improvement of road framework plan is proposed as seen in Figure 2. It basically comprises (i) ring road (R1-R2-R3), the south-north direction road (S2-S3) including S1, the third road (E3) and existing national road (E1-E2). Such road framework is planned not only in due consideration of effective to link among the sub-centers to be developed but also contribute to emergency case.



Source: JICA Study Team

Figure 2 Road Framework Plan

- (24) Housing development is a matter of urgent since there are still 65, 500 dislocated people in shelter and/or temporary accommodation. Those dislocated people could be categorized into two; one is to return to their homeland and the other resettles in the new residential areas. The required number of houses is estimated at 23,900 in 2009, consisting of 13,100 for the dislocated people and 10,800 houses for influx of population. Public facilities such as schools, hospitals, public markets, and so on will be reconstructed keeping pace with the population growth.
- (25) For disaster preparedness, higher priority will be given to implementation of non-structural measures, especially warning system and disaster awareness, in view of cost and long range acquired of disaster mitigation effects, as well as administrative guidance for the installation of external stairs to existing buildings and newly-built public facilities as escape building. Coastal forest are recommended to be developed as part of structural measure as soon as possible, while the reinforced-concreted structures such as seawall and detached breakwater will be part of reconstruction plan in the future, though inhabitants especially in severely affected areas hope such structure to be constructed in short time.
- (26) It is a matter of importance to incorporate the willingness and desire of the people in the affected areas in order to proceed with rehabilitation and reconstruction works. In fact with cooperation of NGOs and other government agency concerned, in a couple of villages such initiatives as preparation of village map and plan are in progress now. It is therefore proposed that the so-called bottom-up approach oriented from communities and top-down approach by the administration must be coordinated and assimilated each other to build up better society and living environment with preparedness against potential disaster.
- (27) Further, it is presumed that both communities and local government administration would encounter various difficulties and problems, such as alignment of roads, public facilities, land consolidation matters, etc., as experienced in disaster affected cities in other part of the world including Japan.
- (28) Having experience and knowledge of re-building up of the city after disaster in Japan, the JICA Study Team elaborated and introduced (i) general approach to village planning, (ii) general approach to micro plan, and (iii) case studies for micro planning. The JICA Study Team wishes that these outputs could be used as one of guidelines for planning and implementation in the later stage.

SECTOR DEVELOPMENT PLAN

- (29) The rehabilitation and reconstruction plan requires not only the city development plan but also sector plans for (i) Water supply, (ii) Urban sanitation and drainage, (iii) Road and transport, (iv) Health and medical care, (v) Education, and (vi) Disaster preparedness. Without these it is hardly possible to achieve goals of the plan. It is however advisable to conduct more in-depth study for the respective sector as earlier as possible to materialize the proposed plan in this report.
- (30) Water supply system is one of the sectors to be addressed as quickly as possible to be back commercial activities to the normal and for dislocated families to their home land. Efforts have been centering on rehabilitating distribution network as part of Quick Impact Projects under Japanese aid program. Upon completion of this program, water distribution within the city could be served evenly with enough pressure even in case of fire. It is however recommended that PDAM staffing needs to be reinforced as numbers of experienced staffs were lost by the disaster.
- (31) Urban drainage rehabilitation in the devastated area and city center is planned taking into account the city development plan and is prioritized including rehabilitation of pump facilities, primary channels and water gates, construction of retarding ponds and dredging of channels. In the area subject to inundation habitually it is advisable to pay special attention during coming rainy season and during high tide. In addition reconstruction of floodwalls and dykes along the main rivers are very important to protect a large extent of land from inundation. It is reported that such reconstruction works are also one of the Quick Impact Projects to be undertaken by the Government of Japan.
- (32) Recovery and expansion of human excrement treatment plant (IPLT) is indispensable from environmental point of view. At present septage collected from houses and buildings are disposed to the sea without any treatment, causing deterioration of aqua-ecology. It is also required to reinforce Sanitary and Park Department (DKP) in terms of staffing and collection of fleet of septage collection. DKP had lost numbers of staffs and collection vehicles.
- (33) Existing dumping site will be filled up in about two years. It is recommended that the city administration develops new site or expand the existing site to allow immediate and increasing garbage and solid waste.
- (34) Health and medical cares sector focus on the rehabilitation of damaged health care centers and to resume regular health services in rehabilitation stage by 2006. Revitalization and strengthen of the services including establishment of emergency health system to prepare against extreme cases are to be implemented in reconstruction stage. The routine maintenance of regular health services is required for successive years.

- (35) Education is very important sector to be addressed properly for future Acehese society. Among the education sector programs, the priority project is mainly divided into four (4) categories; namely, (i) restoration of school infrastructures, (ii) teacher production and training for in-service teachers, (iii) scholarship to orphans who lost parents by tsunami, and (iv) upgrading the capacity of education administrators.

PRELIMINARY PROJECT COST

- (36) Project costs for rehabilitation stage (2005-2006), reconstruction stage (2007-2009) and long term stage (2010-2015) are broken down in accordance with the implementation plan and schedule. Preliminary project cost and tentative implementation plan in each sector are subject to change by the related Indonesian authorities.

The total project cost is preliminarily estimated at Rp. 6,618 billion for rehabilitation and reconstruction programs and Rp. 9,292 billion including long-term programs as summarized below.

Table 1 Summary of Preliminary Cost Estimate

SECTOR	(Rp. billion)			
	Rehabilitation (2005 – 2006)	Reconstruction (2007 – 2009)	Long-term (2010 – 2015)	TOTAL
A. Housing	780.0	524.9	588.9	1,893.8
B. Electricity & Communication	651.3	1,281.2	780.0	2,712.5
C. Water Supply	115.9	8.2	21.7	145.8
D. Drainage and Sanitation	324.2	357.9	176.7	858.8
E. Road and Transport	619.2	154.9	593.5	1,367.6
F. Health	324.6	84.9	88.3	497.8
G. Education	621.0	323.0	25.0	969.0
H. Disaster Preparedness	25.0	172.9	321.8	519.7
J. Public Market etc.	112.1	136.5	78.0	326.6
TOTAL	3,573.3	3,044.4	2,673.9	9,291.6

Source: JICA Study Team

ORGANIZATION FOR IMPLEMENTATION

- (37) Banda Aceh City and NAD Province are the implementing bodies for the rehabilitation and reconstruction projects for the city, while BRR plays an important role as a coordinating agency to ensure transparency, accountability and speed in the reconstruction of Aceh and Nias. It is recommended to implement all the required rehabilitation and reconstruction projects for the city based on the principles of transparency, accountability, participation and responsibility by prioritizing public interest and remaining free of corruption, collusion, and nepotism.

FINAL REPORT (1)
VOLUME II: MAIN REPORT
FOR
THE STUDY
ON
THE URGENT REHABILITATION AND RECONSTRUCTION PLAN
FOR
BANDA ACEH CITY

PREFACE
 LETTER OF TRANSMITTAL
 LOCATION MAP OF BANDA ACEH CITY
 PHOTOGRAPHS
 CONCLUSIONS AND RECOMMENDATIONS

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ABBREVIATIONS

ADB	Asian Development Bank
AIPRD	Australia-Indonesia Partnership for Reconstruction and Development
AMDAL	Environmental Impact Assessment <i>Analisis Mengenai Dampak Lingkungan</i>
ANDAL	Environmental Impact Statement <i>Dokumen Analisis Dampak Lingkungan</i>
ARF	Aceh Recovery Forum
ARI	Acute Respiratory Infection
ARRIS	Aceh Rehabilitation and Reconstruction Information System
AusAID	The Australian Agency for International Development
BAPEL	Rehabilitation and Reconstruction Executing Agency <i>Badan Pelaksana Rehabilitasi dan Rekonstruksi</i>
BAPPENAS	National Development Planning Agency <i>Badan Perencanaan dan Pembangunan Nasional</i>
BAPPEDA	Regional Development Planning Agency <i>Badan Perencanaan Pembangunan Daerah</i>
BAPEDALDA	Regional Environmental Impact Management Agency <i>Badan Pengendalian Dampak Lingkungan Daerah</i>
BPOM	Drug and Food Control Center <i>Badan Pengawasan Obat dan Makanan</i>
BCPR	Bureau for Crisis Prevention and Recovery
BPN	National Land Agency <i>Badan Pertanahan Nasional</i>
BPS	National Statistics Bureau <i>Badan Pusat Statistik</i>
BRR	Rehabilitation and Reconstruction Agency for Aceh and Nias <i>Badan Rehabilitasi dan Rekonstruksi NAD-Nias</i>
CBD	Central Business District
CEIC	Center for the Study of Education in an International Context
CEP	Community Empowerment Program
CHO	City Health Office
CGI	Consultative Group on Indonesia
Desa	Village
DFID	The United Kingdom Department for International Development
DKP	Department of Sanitary and Park <i>Dinas Kebersihan dan Pertamanan</i>
DOTS	Direct Observation and Treatment, Short Term
DPU	Department of Public Works <i>Dinas Pekerjaan Umum</i>
DTM	Digital Topographic Map
EDB	Education Department of Banda Aceh City
EDNP	Education Department of NAD Province
EIA	Environmental Impact Assessment (AMDAL)
EIS	Environmental Impact Statement (ANDAL)
EOJ	Embassy of Japan

EPI	Expanded Immunization Program
ERTR	Emergency Response and Transitional Recovery
ETESP	Earthquake and Tsunami Emergency Support Project
GIS	Geographical Information System
GNI	Gross National Income
GOI	Government of Indonesia
GOJ	Government of Japan
GTZ	German Technical Cooperation Agency <i>Deutsche Gesellschaft für Technische Zusammenarbeit</i>
GRDP	Gross Regional Domestic Product
HIC	UN Human Information Centre
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IATPI	Indonesian Society of Sanitary and Environmental Engineers <i>Ikatan Ahli Teknik Penyehatan dan Teknik Lingkungan Indonesia</i>
IDPs	Internal Displaced Peoples
IDPC	Internal Displaced Peoples' Camps
IFRC	International Federation of Red Cross and Red Crescent Societies
INGO	International Non Governmental Organization
ILO	International Labor Organization
IMR	Infant Mortality Rate
IPLT	Human Excrement Treatment Plant
IOM	International Organization for Migration
IRD	International Relief and Development
JICA	Japan International Cooperation Agency
JICS	Japan International Cooperation System
Kabupaten	District
Kecamatan	Sub-district
Kota	City/ Municipality
LGSP	Local Government Support Project
LGU	Local Government Unit
LPMP	Quality Assurance in Education Institution <i>Lembaga Penjamin Mutu Pendidikan</i>
LSM	Non Governmental Organization <i>Lembaga Swadaya Masyarakat</i>
MA	Islamic Senior High School <i>Madrasah Aliyah</i>
MOC	Ministry of Communication
MCK	Communal toilet/ bath facility <i>Mandi Cuci Kakus</i>
MDGs	Millennium Development Goals
MI	Islamic elementary school <i>Madrasah Ibtidaiyah</i>
MMR	Maternal Mortality Rate
MOH	Ministry of Health
MONE	Ministry of National Education
MORA	Ministry of Religion Affairs
MOU	Memorandum of Understanding

MPU	Muslim Leader Consultative Council <i>Majelis Permusyawaratan Ulama</i>
MT	Islamic Junior High School <i>Madrasah Tsanawiyah</i>
NAD	Nanggroe Aceh Darussalam
NGO	Non Governmental Organizations (LSM)
O&M	Operation and Maintenance
PALYJA	Water Company of Jakarta City <i>PT PAM Lyonnaise Jaya</i>
PAUD	Early Age Children Education Institution <i>Pendidikan Anak Usia Dini</i>
PDAM	Water Supply Authority <i>Perusahaan Daerah Air Minum</i>
PEQIP	Primary Education Quality Improvement Project
PHO	Provincial Health Office
PKBI	Indonesia Planned Parenthood Association (NGO) <i>Perkumpulan Keluarga Berencana Indonesia</i>
PKBM	Community Learning Center <i>Pusat Kegiatan Belajar Masyarakat</i>
PMI	Red Cross Indonesia <i>Palang Merah Indonesia</i>
Propinsi	Province
Posyandu	Integrated Health Service Post <i>Pos Pelayanan Terpadu</i>
PSDAK	Road and Water Resources Department, Banda Aceh City <i>Dinas Prasarana Jalan dan Sumber Daya Air Kota Banda Aceh</i>
PTSD	Post Traumatic Stress Disorder
PU	Ministry of Public Works <i>Departemen Pekerjaan Umum</i>
PVC	Polyvinyl chloride
QIP	Quick Impact Project
RA	Islamic kindergarten <i>Raudatul Athfal</i>
RDB	Religion Department of Banda Aceh City
RDNP	Religion Department of NAD Province
REDIP	Regional Education Development and Improvement Program
RRI	The State Radio of Indonesia <i>Radio Republik Indonesia</i>
RTRW	Revised Plan of Regional Space Layout <i>Rencana Tata Ruang dan Wilayah</i>
R3MAS	Rehabilitation and Reconstruction Plan for the People of Aceh & North Sumatra <i>Rencana Rehabilitasi dan Rekonstruksi Masyarakat Aceh & Sumatra Utara</i>
SD	Elementary school <i>Sekolah Menengah</i>
SDC	Swiss Agency for Development and Cooperation
SETNEG	National Secretariat <i>Sekretariat Negara</i>

SMA	Senior High School <i>Sekolah Menengah Atas</i>
SMK	Senior Vocational High School <i>Sekolah Menengah Kejuruan</i>
SMP	Junior High School <i>Sekolah Menengah Pertama</i>
SPK	District Nursing School <i>Sekolah Perawat Kesehatan</i>
STI	Sexually Transmitted Infections
THW	German Federal Agency for Technical Relief <i>Technisches Hilfswerk</i>
TK	Kindergarten <i>Taman Kanak-kanak</i>
TLC	Temporary Location Center
TOR	Terms of Reference
TOT	Training of Trainers
TPA	Reading Al Qur'an Institution <i>Taman Pengajian Al-Qur'an</i>
TVRI	National Broadcast of Indonesia <i>Televisi Republik Indonesia</i>
UFW	Unaccounted for Water
UKL	Environmental Management Plan <i>Upaya Pengelolaan Lingkungan</i>
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UPL	Environmental Monitoring Plan <i>Upaya Pemantauan Lingkungan</i>
USACE	The United States Army Corps of Engineers
USAID	The US Agency for International Development
URRP	Urgent Rehabilitation and Reconstruction Plan
VCT	Volunteer Testing and Counseling
WB	World Bank
WHO	World Health Organization
WTP	Water Treatment Plant
YAB	(Acehnese NGO) <i>Yayasan Anak Bangsa</i>
YADESA	(NGO) <i>Yayasan Desa</i>
YASINDO	(NGO) <i>Yayasan Sinar Desa Indonesia</i>
YCDI	(Acehnese NGO) <i>Yayasan Citra Desa Indonesia</i>
YIPD	(Acehnese NGO) <i>Yayasan Inovasi Pemerintahan Daerah</i>
YNDN	(Acehnese NGO) <i>Yayasan Nandra Dian Nusantara</i>

CHAPTER 1 BACKGROUND

1.1 BACKGROUND OF THE STUDY

Large earthquake, with the magnitude of 9.0 on the Richter scale, occurred at 250 km south from Banda Aceh City on 26 December 2004 (Figure 1.1.1). Huge Tsunami was triggered by the earthquake and avalanched to Nanggroe Aceh Darussalam (NAD) and North Sumatra Provinces after 30 minutes of the earthquake. The earthquake and succeeding Tsunami brought about a number of casualties of more than 200,000 and direct damage of Indonesian Rupiah (Rp.) 40 trillion equivalent to US\$ 4,450 million.

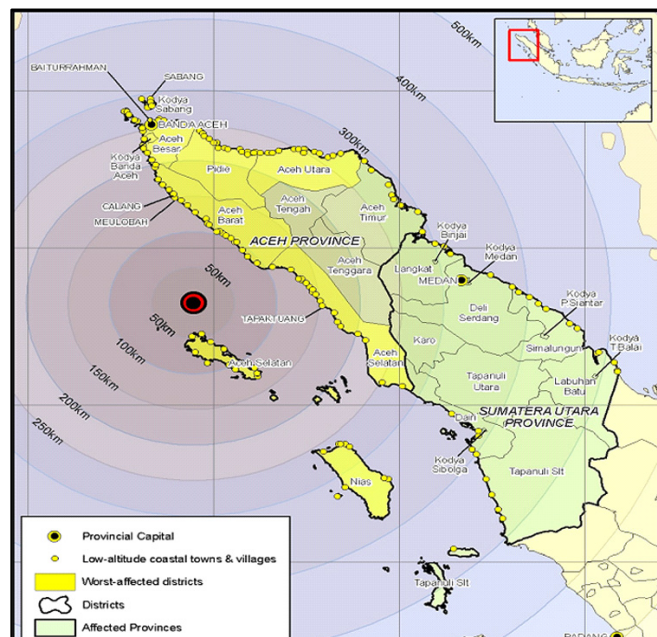
The Government of Indonesia (GOI) assigned National Development Planning Agency (BAPPENAS) as an executing government agency to establish the Rehabilitation and Reconstruction Plan for the people of Aceh and North Sumatra (R3MAS) within three (3) months in coordination among the government line agencies, donors, local government and NGOs.

The Banda Aceh City with an area of 61 km² is located at the coast line of northern end of the Sumatra Island. The City had a population of 263,668 (54,751 households) in December 2004. The Tsunami with a height of over 10 m destroyed the city area entirely. Almost all buildings within a 4 km radius from the coast line were swept away.

Immediately after the incident, the Government of Japan (GOJ) decided to render support for rehabilitation and reconstruction and provide assistance to the damaged areas. Japan International Cooperation Agency (JICA) dispatched the Project Formulation Mission to recognize the damages, assess the needs and determine on the urgent measures to be undertaken. As a result of discussions with the JICA Project Formulation Mission, the Government of Indonesia (GOI) requested the GOJ to conduct an urgent study for the following objectives:

- (1) Formulation of Urgent Rehabilitation and Reconstruction Plan in the affected areas,
- (2) Designing/cost estimation and monitoring of Quick Impact Projects.

In response to the request from the GOI, JICA decided to implement a Study on Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City (The Study).



Source : United Nations OCHA

Figure 1.1.1 Epicenter of Earthquake (26 Dec. 2004)

1.2 THE STUDY

1.2.1 Objectives

The objectives of the Study are:

(1) Formulation of Urgent Rehabilitation and Reconstruction Plan

To formulate an Urgent Rehabilitation and Reconstruction Plan (the Plan) for Banda Aceh City with a target year of 2009.

(2) Carry out Designing, Cost Estimation and Monitoring of Quick Impact Projects

To provide a technical assistance including designing, cost estimation and monitoring of Quick Impact Projects which will be brought into realization by the Government of Indonesia.

(3) Establishment of Aceh Rehabilitation & Reconstruction Information System (ARRIS)

To prepare Digital Topographic Maps (DTM) with a scale of 1/2,000, necessary for formulation of an Urgent Rehabilitation and Reconstruction Plan (the Plan) for Banda Aceh City, and to establish an information system for rehabilitation and reconstruction of Banda Aceh City, which can be shared among stakeholders.

1.2.2 Study Area

The Study Area covers the Banda Aceh City with an area of 61 km² (See figure at frontispiece of the report) and its vicinity.

1.2.3 Scope of the Study

The Urgent Rehabilitation and Reconstruction Plan aims to reconstruct the city to the pre-disaster condition, which is to be achieved in five (5) years from the incident of the disaster, and will be formulated urgently with an initiative of the people of Aceh.

For the Urgent Rehabilitation and Reconstruction Plan, it is important to incorporate a concept of "Disaster Mitigation", that is, urban spatial plan and strengthening of institutional arrangement to mitigate potential damages in the future.

Aside from the reconstruction of infrastructure, the integration of Community Empowerment Program (CEP) is prerequisite for the accommodation of the Internal Displaced People (IDP).

In addition to the formulation of the Urgent Rehabilitation and Reconstruction Plan, the scope of the Study also covers the assistance for the implementation of the 5 Quick Impact Projects and includes confirmation of the scope of work, designing, cost estimate and monitoring of project implementation during the Study period.

The scope of the Study also includes preparation of digital topographic maps (1/2,000) which will be required for formulation of the Urgent Rehabilitation and Reconstruction Plan and establishment of the information system that can be shared among the stakeholders.

It should be noted that the following four (4) aspects are very important for the Study:

- (1) relying on the initiatives by the people of Aceh,
- (2) due respect on the Islam culture and values,
- (3) coherence in the Indonesian society, and
- (4) coordination with the international donor community.

The tasks for the Study are set forth as follows:

Table 1.2.1 Task for the Study

Task	Works
Task 1	Formulation of a comprehensive rehabilitation and reconstruction plan to be materialized on wide experiences of disaster reconstruction particularly in Japan.
Task 2	Formulation of urban master plan focusing on disaster mitigation
Task 3	Support of Community Empowerment Program (CEP) for the Internal Displaced People (IDP).
Task 4	Designing, cost estimation, and monitoring of Quick Impact Projects.
Task 5	Preparation of digital maps (1/2,000) to be used for the Urban Planning and establishment of a Geographical Information System (GIS), so-called Aceh Rehabilitation and Reconstruction Information System (ARRIS).

Source : JICA Study Team

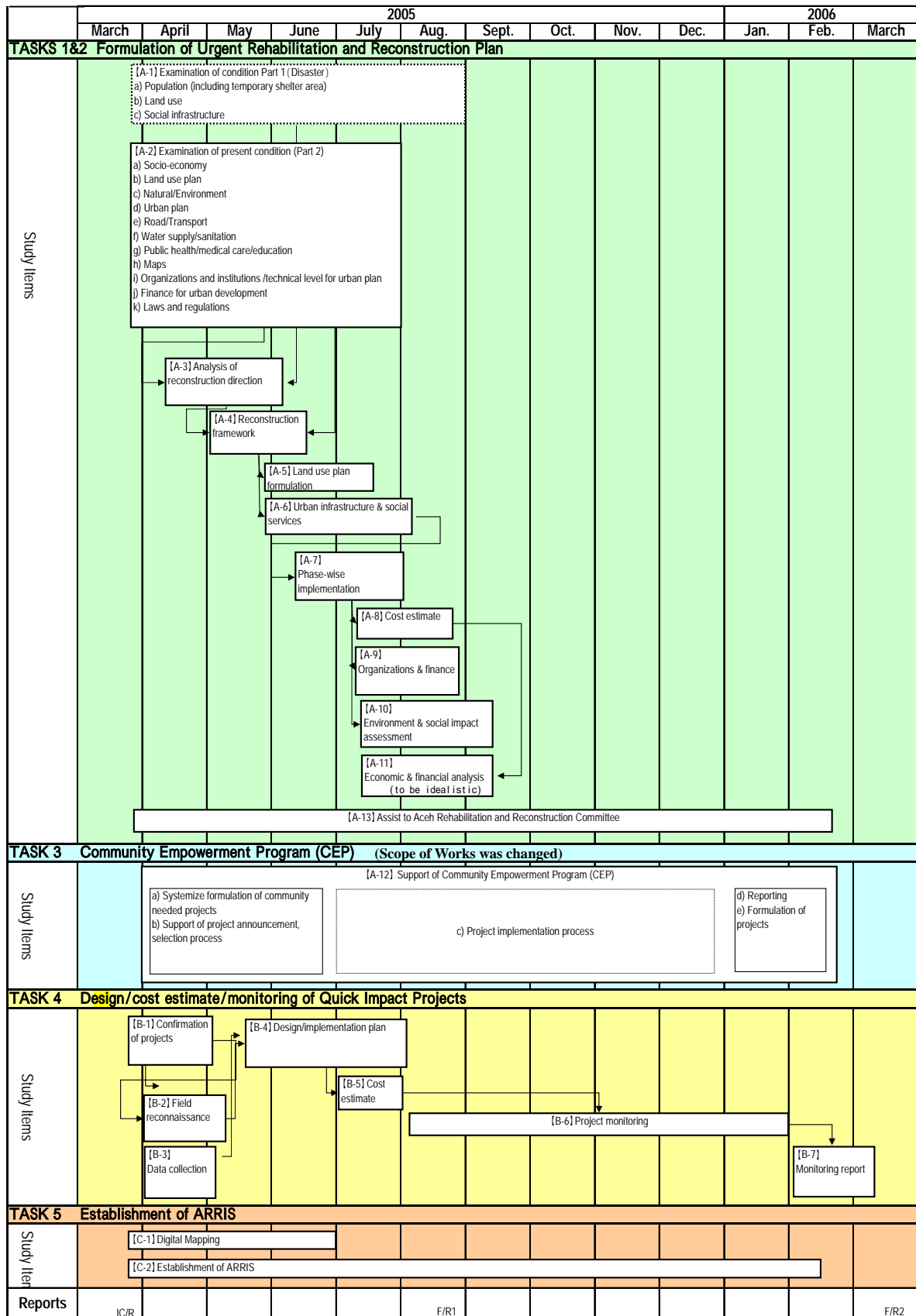
1.2.4 Work Schedule and Staff Schedule

Work schedule for the Study is shown below. Detailed work plan and schedule are summarized in Figures 1.2.1.

Table 1.2.2 Overall Work Schedule

	2005										2006		
	3	4	5	6	7	8	9	10	11	12	1	2	3
TASK 1	██												
TASK 2	██												
TASK 3	██												
TASK 4	██												
TASK 5	██												

Source : JICA Study Team



Source : JICA Study Team

Figure 1.2.1 Detailed Work Plan and Schedule

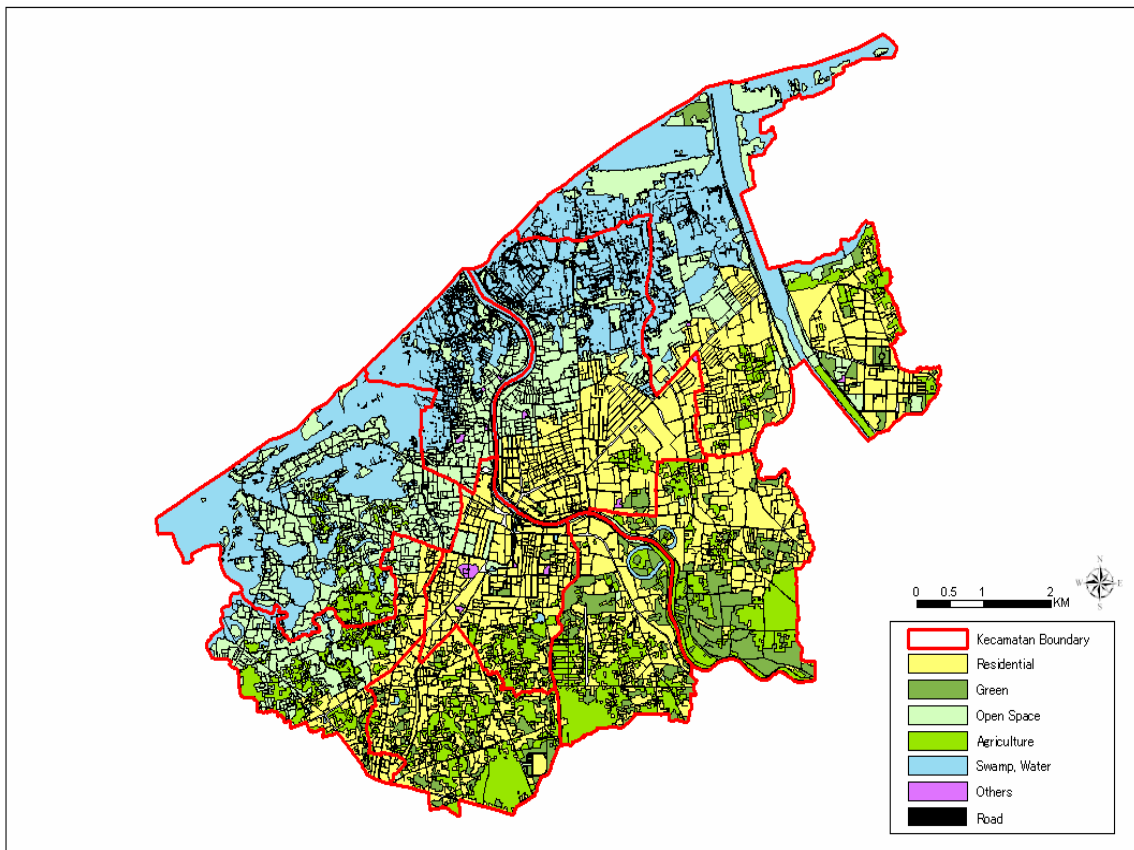
1.3 PHYSICAL CONDITIONS OF THE STUDY AREA BEFORE DISASTER

1.3.1 Topography and Accesses of Banda Aceh City

The topography of Banda Aceh City is characterized with elevation of approximately 2.5 m in most of low lying lands. It is faced with the straight of Malacca on the north, and bounded by Floodway on the east. Its east and south boundaries face to Aceh Besar province (kecamatan Darul Imarah and Ingin Jaya). Accesses to Banda Aceh City are land route, air route and sea route from Medan, Meulaboh and Krueng Raya. Administratively the Banda Aceh City is consists of 9 kecamatan (districts) with total desa (villages) of 89. The administrative division is as shown in Location Map.

1.3.2 Land Use after Disaster

There was no existing land use map before disaster for Banda Aceh City. The land use map after the disaster was developed by ARRIS as shown in Figure 1.3.1 and land area is summarized in Table 1.3.1.



Source: ARRIS (GIS) prepared by JICA Study Team

Figure 1.3.1 Land Use in Banda Aceh City after Disaster

Table 1.3.1 Land Area of Land Use after Disaster

Kecamatan	Land Use (ha)									Number of Buildings						
	Residential	Green	Open space	Agriculture	Swamp/water	Others	Road	Total	House	Religion	School	Hospital	Government	Public	Others	
BAITURRAHMAN	280.5	17.7	23.5	44.5	14.7	6.5	41.4	428.8	5,553	18	18	3	24	8	12	
BANDA RAYA	237.5	58.3	3.3	147.2	5.3	0.0	26.3	477.8	3,977	0	8	2	9	0	6	
JAYA BARU	111.0	7.0	175.1	88.7	36.2	0.0	24.4	442.4	2,326	0	6	2	4	0	2	
KUTA ALAM	356.0	12.7	200.8	13.4	291.0	2.4	57.7	934.1	4,458	16	26	7	34	5	7	
KUTARAJA	0.0	0.1	144.9	0.0	208.8	2.2	9.4	365.4	101	1	0	0	1	0	0	
LUENG BATA	191.9	81.8	4.8	142.9	18.4	0.1	24.6	464.6	3,690	8	1	1	3	3	2	
MEURAXA	0.0	0.0	373.1	47.8	445.8	0.0	28.3	895.0	375	6	8	2	0	0	5	
SYIAH KUALA	394.1	49.0	284.2	81.8	555.9	0.9	49.1	1,414.9	622	0	3	0	0	0	1	
ULÉE KARENG	255.6	141.7	4.5	142.9	17.4	0.0	24.9	587.2	3,931	8	3	3	6	0	4	
Total	1,826.5	368.4	1,214.3	709.3	1,593.5	12.2	286.1	6,010.2	25,033	57	73	20	81	16	39	

Source: ARRIS (GIS) prepared by JICA Study Team

1.3.3 Meteorology

The meteorology station is located at the Sultan Iskandar Muda Airport. The item recorded in this station consists of rainfall, air temperature, relative humidity and wind velocity. The meteorological features during the period from 1994 to 2004 are presented Figure 1.3.2.

(1) Rainfall

The average annual rainfall is about 1,454 mm, of which more than 60 % concentrates on rainy season from October to March.

(2) Air Temperature

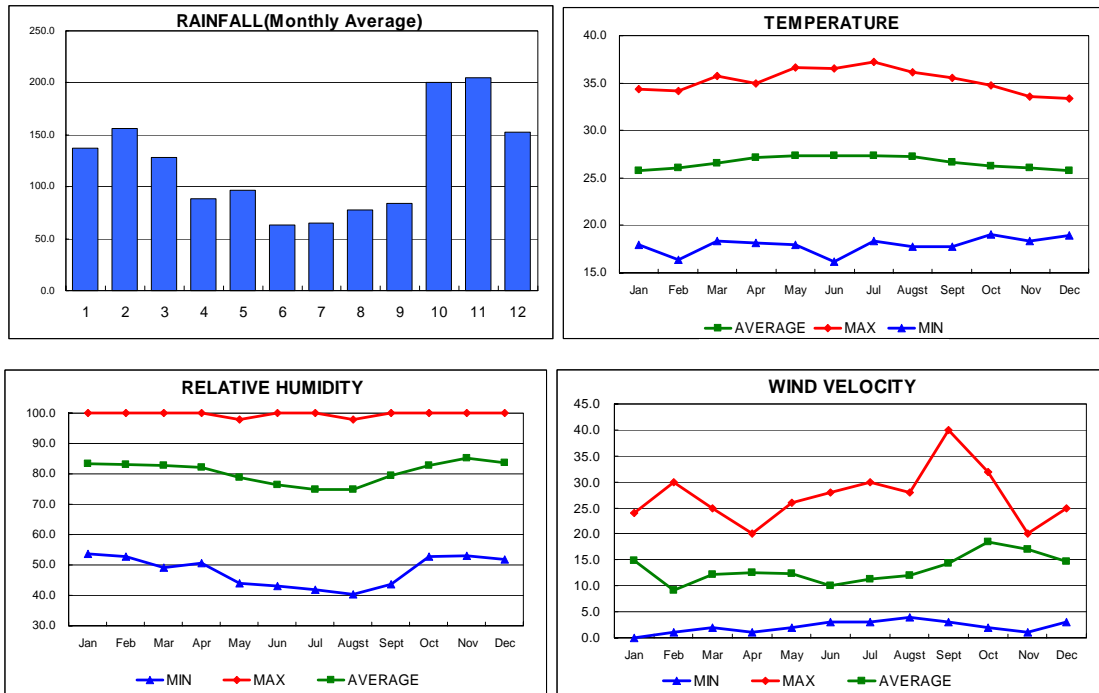
Monthly average temperature remains relatively stable from 25.5 °C to 27.5 °C, with highest season from April totally. The highest and the lowest temperatures vary from about 33.0 °C to 37.0 °C and from 18.0 °C to 20.0 °C respectively.

(3) Relative Humidity

Relative humidity normally fluctuates between 75 % and 85 %. It is generally low during the period from June to September.

(4) Wind Velocity

Wind velocity is not so high. At the station, the average annual velocity is 13.3 m/s with an average maximum wind velocity of 17.3 m/s.



Source: JICA Study Team

Figure 1.3.2 Meteorological Features

1.3.4 Rivers

There are eight (8) rivers flows in Banda Aceh City as listed in Table 1.3.2 below. The floodway was constructed in 1997 aims to divert water krueng Aceh.

Table 1.3.2 Rivers in Banda Aceh City

River Name	Catchments Area(km ²)
Krueng Aceh	1712.00
Krueng Daroy	14.10
Krueng Doy	13.17
Krueng Neng	6.55
Krueng Lhueng Paga	18.25
Krueng Tanjung	30.42
Krueng Titi Panjang	7.80
Floodway	

1.4 SOCIO-ECONOMIC CONDITIONS OF THE STUDY AREA BEFORE DISASTER

1.4.1 Population

The population in 2004 was 263,668 with annual average growth rate between 1998 and 2003 is 2.1 %. The population growth is steep from 2003 to 2004 due to the migrant from surrounding areas due to the civil conflict. The population trend of Banda Aceh City before disaster is shown in Table 1.4.1.

Table 1.4.1 Population Growth for each Kecamatan

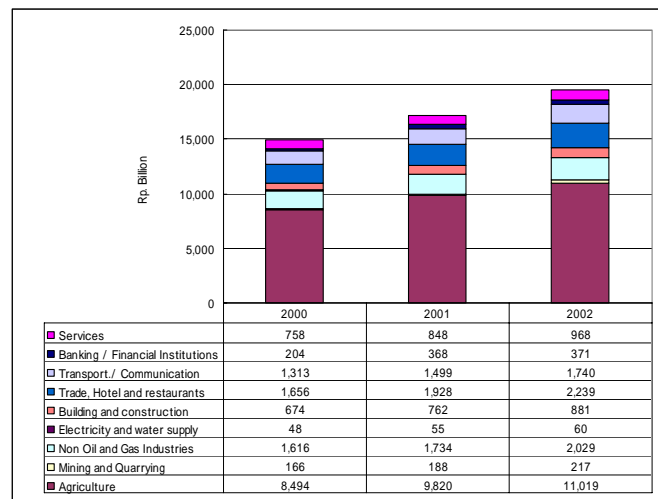
NO	KECAMATAN	Area (m2)	Population							Mean Population Growth
			1998	1999	2000	2001	2002	2003	2004	
1	MEURAXA	7,260,000	62,693	26,735	27,067	27,468	28,156	28,294	31,218	1.4%
2	BAITURRAHMAN	4,474,000	53,531	36,731	33,909	33,399	33,331	33,960	37,449	-1.9%
3	KUTA ALAM	10,047,000	57,846	49,648	52,819	53,554	50,338	53,840	55,062	2.2%
4	ULEE KARENG	6,150,000	-	12,862	13,647	13,722	15,169	16,291	17,510	6.1%
5	JAYA BARU	3,832,000	-	18,324	18,983	20,902	21,133	21,271	22,005	3.9%
6	BANDA RAYA	4,789,000	-	16,426	16,927	17,563	17,802	17,873	19,071	2.1%
7	LUENG BATA	5,341,000	-	13,829	13,092	13,477	15,064	16,901	18,360	5.4%
8	SYIAH KUALA	14,242,000	38,252	26,595	26,277	26,398	26,554	28,216	42,776	1.5%
9	KUTA RAJA	5,377,000	-	16,247	18,143	18,283	18,503	18,877	20,217	3.9%
Total		61,512,000	212,322	217,397	220,864	224,766	226,050	235,523	263,668	2.1%

source: Dalam Angka

1.4.2 Economic Condition

(1) Economic Framework

The Gross Regional Domestic Product (GRDP) trend of NAD is shown in Figure 1.4.1. The GRDP in 2002 was Rp.35,471 billion includes oil and gas which covers 55 % of the total figure. The GRDP in 2003 was RP.38.6 trillion (equivalent to US\$ 4.5 billion), included oil/gas. The GRDP without oil and gas was Rp.22.0 trillion. Among them, the primary sector (agriculture, fishery and forestry) was covered for 56 %. The secondary sector (without oil/gas) was 10 % and the tertiary sector was 34 %.



Source: Aceh Dalam Angka 2003

Figure 1.4.1 GRDP of Aceh Province (2000 - 2002)

Table 1.4.2 Economic Structure of Aceh in 2003 Production Account

(Share in total GDP, nominal, %)

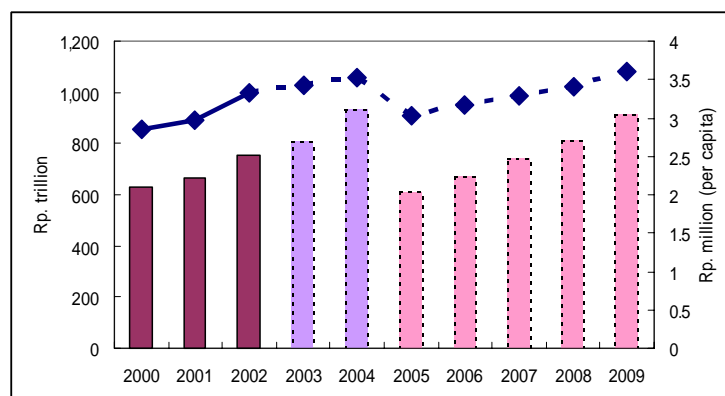
	National		Aceh			
	Share in GDP (%)	Rp.Trillion	Share in GDP (%)	Share in GDP (%) Non-oil & gas	Rp. Trillion	Share in national GDP (%)
GDP	100.0	1,786.7	100.0		38.6	2.3
o/w oil and gas	10.7	1,594.9	43.0		16.6	1.0
o/w Non-oil and gas	89.3	191.7	57.0	100.0	22.0	11.5
Agriculture	16.6	296.2	32.2	56.4	12.4	4.2
Mining	10.7	191.2	28.8		10.8	5.7
Manufacturing	24.7	440.5	21.2		8.2	1.9
o/w oil and gas	3.8	68.1	15.6		6.0	8.8
o/w non-oil and gas	20.8	372.3	5.6	10.0	2.2	0.6
Utility	2.2	39.7	0.3	0.5	0.1	0.3
Construction	6	107.1	2.7	4.5	1.0	1.0
Trade	16.3	291.6	6.4	11.4	2.5	0.8
Transportation & Communication	6.3	111.7	5.1	9.1	2.0	1.8
Finance	6.9	123	1.2	2.3	0.5	0.4
Services	10.4	185.7	2.9	5.0	1.1	0.6

Note. National GDP is not equal to the aggregate number of regional GDP due to technical issues. 1993 base GDP

Source. CEIC, World Bank staff calculation and Notes on Reconstruction, BAPPENAS, CGI, 2005

The growth rate of GRDP was 3.55 % in 2002. This was lower than the national rate of 4.3 %. The GRDP per capita in Banda Aceh City was Rp.3,325 thousand (approximately US\$ 350, excludes oil/gas) in 2002. It was about half of the National GDP of US\$710 (GNI, World Bank, 2002).

The GRDP in Aceh Province would drop about 13.9 % by the disaster¹ in 2005. Assuming that the GRDP per capita in Banda Aceh City is recovered by 2009 to the level in 2004, the GRDP per capita in Banda Aceh City would be Rp.913 billion in 2009 (Figure 1.4.2).



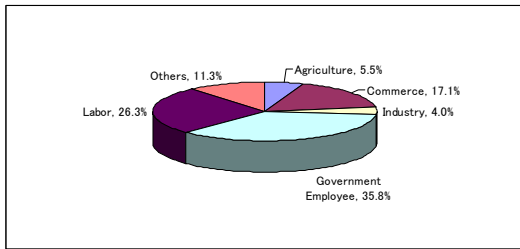
Source: Aceh Dalam Angka 2003 and Study Team

Figure 1.4.2 Trend and Forecast of GRDP of Banda Aceh City

¹ Indonesia: Preliminary Damage and Loss Assessment; BAPPENAS, CGI, Jan. 2005

(2) Employment – Banda Aceh City

Employment by Kecamatan in 2002 is shown in Figure 1.4.3. The total number was 55,326 and 24.2 % to the total population. Government employee was large accounting for 35.8 %, followed by labor (26.3 %). Commerce accounted for 17.1 % and agriculture was 5.5 %. Industry was as small as 4.0 %. Fishery was not categorized. Kecamatan Kuta Alam had largest employment of 13,712. The employment in 2009 was projected in proportion to the population. (Figure 1.4.4)



Source: Aceh Dalam Angka 2003

Figure 1.4.3 Composition of Employment

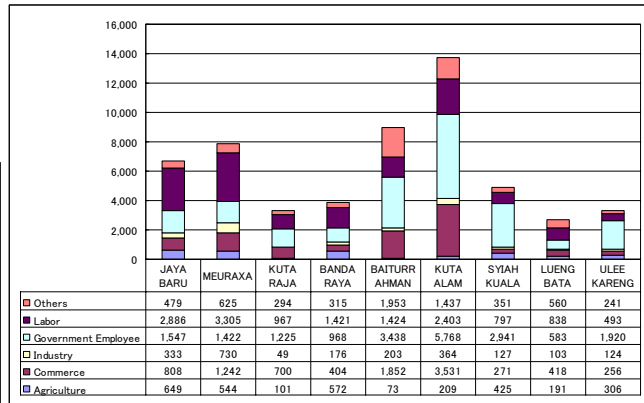


Figure 1.4.4 Employment by Kecamatan (2002)