

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM  
BANDA ACEH CITY  
REHABILITATION AND RECONSTRUCTION AGENCY (BRR)

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  
  
ADDITIONAL STUDY ON URRP  
VOLUME I : EXECUTIVE SUMMARY

MARCH 2006

NIPPON KOEI CO., LTD.  
YACHIYO ENGINEERING CO., LTD.  
PASCO CORPORATION

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VOLUME II	:	MAIN REPORT
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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 (URRP) 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 March 2006.

In August 2005, presentation meeting on Draft Final Report (1) for the URRP was held and all outputs of the study were favorably agreed by agencies concerned of the Government of Indonesia. In September, Final Report (1) for the URRP was submitted to the Government of Indonesia. During the above presentation meeting in August 2005, Banda Aceh City and BRR (Rehabilitation and Reconstruction Agency) requested JICA to continue further technical assistance. In response to the request, JICA decided to conduct this Additional Study on URRP from October 2005 to February 2006.

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 reconstruction and development of Banda Aceh City 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.

March 2006

Kazuhisa Matsuoka  
Vice President  
Japan International Cooperation Agency

Mr. Kazuhisa Matsuoka  
Vice President  
Japan International Cooperation Agency  
Tokyo, Japan

**Subject: Letter of Transmittal**

Dear Sir,

We are pleased to submit herewith the Final Report for the “Additional Study on URRP 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 October 2005 to March 2006. The report consists of Executive Summary, Main Report and Annex.

The report presents outputs and recommendations for Banda Aceh metropolitan concept, Banda Aceh City structural plan with target year 2015, three model areas reconstruction plan, and rehabilitation and reconstruction program.

We would like to take this opportunity to express our sincere gratitude to your Agency, and 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



**Location Map of Banda Aceh City – Aceh Besar - Sabang**

## **CONCLUSIONS AND RECOMMENDATIONS**

### **BACKGROUND**

- (1) This Additional Study was conducted in response to the request made by the Mayor of Banda Aceh City and the BRR on August 13, 2005.
- (2) The Additional Study was actually undertaken by the Indonesian consultant, PT. Wiswakharman, which was awarded through a competitive bidding conducted by the JICA Study Team on October 15, 2005. The study period extended over four and a half (4.5) months from middle of October 2005 to end of February 2006.
- (3) This Report is prepared on the basis of the outputs of the above mentioned consultant.

### **OBJECTIVES OF THE ADDITIONAL STUDY**

- (4) The objectives of the Additional Study are (a) establish a long term vision for development of Banda Aceh City (hereinafter referred to as “BAC) and its surroundings, (b) provide a detailed BAC structure plan, (c) formulate immediate and short term program for rehabilitation and reconstruction works in BAC, and (d) formulate and prepare a layout plan for three (3) reconstruction model areas.

### **THE STUDY AREA**

- (5) The Study Area practically covers three (3) administrative areas, Sabang City, BAC and Aceh Besar Regency (hereinafter referred to as “ABR”), with a gross area of 2,886km<sup>2</sup>. It is seen in the location map in frontispiece.
- (6) Both Sabang City and BAC were severely devastated by the 2004 disaster because of their geographic location. Population in the Study Area was approximately 544,300 in 2003 and was reduced by more than 70,000 by the disaster.
- (7) BAC is a capital of the Nanggroe Aceh Darussalam Province (hereinafter referred to as “NAD”) and is the center of administration, economy, culture and education in NAD as well as hub of transportation and logistics in the northern Sumatra. Its population accounts for approximately 40 % of total population in the Study Area, though its administrative area shares only 2.1% of the whole Study Area.
- (8) Gross Regional Domestic Product (GRDP) without oil and gas was Rp. 993 billion in BAC, Rp. 142 billion in Sabang City and Rp. 1,510 billion in ABR at current rate in 2002. The average GRDP per capita is Rp. 4.88 million, far below the national average. Per capita income is Rp. 3,585 million on the average in 2002, being about a half of the national average.
- (9) It is concluded that there is serious need in enhancement and promotion of economic development to minimize an economic disparity with the other part of the country, to

bottom up level of livelihood and to create a stable and peace society. It is also concluded that integrated development with a concept of Banda Aceh metropolis would be rational and efficient.

#### **FORMULATION OF BANDA ACEH METROPOLITAN CONCEPT**

- (10) The formulation of metropolitan concept was achieved through five (5) steps: (a) establishment of long term vision, (b) identification of regional centers to be prospective to form part of metropolis, (c) analyses of interaction and interdependency between BAC and regional centers, (d) formulation of urban system concept, and (e) formulation of metropolitan macro spatial structure plan, in order of process.
- (11) The long term vision is set forth paying attention to the preservation of the tradition, culture, and Islamic principle, and comprises four (4) sub-visions as follows:
  - In accordance with the national and provincial policies, development of BAC will be directed to be core of economy, social, culture and religion in the Northern Sumatra
  - BAC will be motivated to be the northern international gateway of the country taking its geographic advantage. Given rich human and natural resources industrial development will be promoted along with this vision.
  - People shall be protected from possible future disaster
  - The Study Area will continuously co-exist with the precious natural environment.
- (12) Through the preliminary screening it is concluded that BAC would have stronger linkage with the Aceh Besar Regency (ABR) than other regencies in NAD. Within ABR, there are 22 regional centers within ABR, and interaction of BAC to the respective center was analyzed. As a result it is found that 13 centers in ABR have very to strong linkage with BAC.
- (13) It is confirmed through interdependency analysis that those 13 centers are located within a distance of influence of BAC. It is therefore concluded that the Banda Aceh metropolis will be composed of BAC, Sabang City and 13 regional centers within ABR. The contemplated metropolitan area extends over 800 km<sup>2</sup>.
- (14) The metropolitan urban system is studied and in view of population, distance between BAC and the centers concerned and present economic activities. BAC, Sabang City and 13 nominated regional centers are classified into core city, satellite city and growth center as follows, subject to further study in future. Within integrated urban system, each city and center bears various functions as also noted below.



Category of Urban System	City/Center	Main Function
Core city	BAC	<ul style="list-style-type: none"> <li>➤ Center of government services</li> <li>➤ Center of commercial, education, culture and religion</li> <li>➤ Hub of transport and logistics</li> </ul>
Satellite city	Sabang City, Lahokonga, Lambaro, Krueng Raya	<ul style="list-style-type: none"> <li>➤ District service center</li> <li>➤ Supporting function of BAC</li> <li>➤ Agro-industry and industry</li> </ul>
Growth center	Peukan Bada, Cot Iri, Lambaro Angan, Peukan Biliu, Lambada Lhok, Montasik, Peukan Ateuk, Sibreh, Blang Bintang, Peukan Bada	<ul style="list-style-type: none"> <li>➤ Residential area</li> <li>➤ Agricultural center</li> <li>➤ Tourism development</li> </ul>

- (15) Macro-spatial structure is worked out preliminarily. The core and satellite cities and growth centers are even at present connected each other by existing road network. The entire metropolitan area is broadly divided into two categories: (a) zone of non-built up area with the area of 36km<sup>2</sup> and (b) zone of development with the area of 44 km<sup>2</sup>.
- (16) The metropolitan development would contribute to minimize existing economic disparity with the other region of the country and to create a peaceful society of the area involved. It is however recommended that a further deep study be conducted to materialize the proposed development concept.

#### **BANDA ACEH CITY STRUCTURE PLAN IN 2015**

- (17) In the context of the long term vision, five (5) different themes are set forth in formulation of the BAC 2015 structure plan. Those are (i) green city concept, (ii) cyber city concept, (iii) promotion of tourism development, (iv) promotion of industrial development, and (v) non-polluted mass transport system. They are studied at preliminary level and the outputs are incorporated into the formulation of the structure plan.
- (18) BAC has its administrative area of 61km<sup>2</sup> and its population is forecast at approximately 360,300 in the year 2015, meaning population density of approximately 5,900 per km<sup>2</sup> which is equivalent to a half of that Jakarta in 2000.
- (19) It is foreseen that increasing population creates a serious burden on land resources, infrastructure, employment and social aspects so that it is important to formulate the 2015 structure plan to absorb and minimize such burdens.

- (20) It is proposed that BAC will broadly be divided into a city center and three (3) urban planning units (Ulee Kareng, Ulee Lheue and Lueng Bata) in term of urban system planning unit. The city center and urban planning units are graded into Urban Hierarchy 1 and 2 respectively. The city center and urban units hold a couple of sub-urban planning units with Urban Hierarchy-3 grade: three (3) in the city center area (City Center A, B and C), two (2) Ulee Kareng Unit (Ulee Kareng A and B), and in Ulee Lheue Unit. In addition there are three (3) sub-sub urban units with Urban Hierarchy-4 grade: one (1) in Lueng Bata Unit and two (2) in Ulee Kareng Unit. The city center unit and each planning unit have their definitive function and role, and sub and sub-sub units act as supporting the city center and main unit.
- (21) The urban skeleton in 2015 is established taking into account the ones elaborated by URRP. It is concluded that the URRP plan could be followed in principle with a slight modification in alignment of the coastal road, Syiah Kuala road and Baru Street on account of land appropriation issue.
- (22) The spatial structure and land use plan are worked out taking into consideration of the special themes studied beforehand. The whole area of BAC will be broadly classified into (i) Preservation and conservation area and (ii) Development area. The development area covers the area of 50 km<sup>2</sup>, corresponding to 82 % of the entire area. Housing area is the predominant among the other, covering the area of 31.9 km<sup>2</sup>, being about 52% of the whole BAC area. It is recommended to conduct a comprehensive study to materialize more detailed structure plan in a period shortest as possible as it is foreseeable that increase of population result in adverse effect on land resources, natural environment and social aspect.
- (23) The infrastructure development plan is deliberated on a basis of the URRP Plan. It is concluded that there is no requirement in change in water supply, flood control, health, education, disaster preparedness and maritime sectors. It is however made a supplementary report on urban sanitation sector, a slight modification on road and urban drainage, and additional plan on electric power supply and telecommunication. It is recommended to conduct deep study for implementation of the respective infrastructure as earlier as possible, since it is forecast that many of existing infrastructure are unable to afford to meet the demand.
- (24) The cost estimate presented in the URRP Plan is updated on a basis of the infrastructure development plan worked out as above. The updated cost is slightly reduced mainly owing to change in housing sector.

	Sector	Estimated Cost (Rp., billion)
1	Housing	863.46
2	Electric power supply and communication	2,712.45
3	Water supply	145.71
4	Sanitation and drainage	859.98
5	Road transport	1,367.58
6	Health	497.80
7	Education	969.00
8	Disaster preparedness	506.92
9	Public facilities	326.56
	Total	8,249.45

## RECONSTRUCTION MODEL PLANNING

- (25) Three (3) areas are selected for planning of reconstruction model. They are Ulee Lheue, Peunayong, and Lueng Bata. The first area with 4 villages is one of the most heavily devastated areas by the 2004 disaster and is susceptible to be hit by the high tide and potential tsunami in future owing to its geographic conditions. The second area is located almost in the central part of BAC and was also affected by the same disaster. The third area lies deep inland and is prospected to be receptacle of influx of increasing population in future.
- (26) For each area, need of development and constraint is identified, and then reconstruction concept and plan are prepared at preliminary level and construction cost is estimated only for the works to be executed under the public investment.

Site	Area (ha)	Present land use	Reconstruction Concept	Estimated cost (Rp., billion)
Ulee Lheue	314	Flattened by tsunami	<ul style="list-style-type: none"> <li>➤ Promotion of tourism with tsunami memorial and historic religious facilities</li> <li>➤ Residential development</li> <li>➤ Water front green concept</li> <li>➤ Disaster preparedness with evacuation and community hall</li> <li>➤ Evacuation road</li> <li>➤ Fish ponds</li> </ul>	171.09
Punayong	48.6	Built-up area	<ul style="list-style-type: none"> <li>➤ Military complex, residential</li> <li>➤ River front</li> <li>➤ City park to be used as emergency relief</li> <li>➤ Re-vitalization of old town</li> <li>➤ Evacuation road</li> </ul>	12.39
Lueng Bata	338	Mostly cultivation with some residential area	<ul style="list-style-type: none"> <li>➤ Green belt, forest, city park</li> <li>➤ Residential area</li> <li>➤ Business district</li> <li>➤ Government and public services</li> </ul>	147.18

## IMPLEMENTATION PROGRAM

(27) The implementation program and annual fund requirement presented in the Final Report (1) of URRP are updated with modification of the infrastructure development and in the light of the ongoing rehabilitation and reconstruction program. The implementation program is divided into short (2005-2006), medium (2007-2009) and long term programs (2010-2015).

The annual fund requirement for the respective sector is worked out in accordance with the tentative construction schedule.

(Unit: Rp., billion)

Sector		Short Term		Medium Term			Long Term						Total
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	Housing	124.90	223.49	223.49	145.79	145.79	0.00	0.00	0.00	0.00	0.00	0.00	863.46
2	Electricity and Communication	325.65	325.65	427.05	427.05	427.05	130.00	130.00	130.00	130.00	130.00	130.00	2,712.45
3	Water Supply	28.00	87.88	9.64	7.76	8.76	3.67	0.00	0.00	0.00	0.00	0.00	145.71
4	Sanitation and Drainage	69.05	255.18	108.59	183.87	87.18	20.03	21.02	25.03	30.01	30.00	30.03	859.98
5	Road and Transport	309.60	309.60	73.96	58.38	22.54	91.20	82.00	83.00	66.74	135.28	135.28	1,367.58
6	Health	149.80	174.80	36.50	24.30	24.10	15.49	14.88	14.47	14.46	14.45	14.55	497.80
7	Education	239.00	382.00	149.00	116.00	58.00	5.00	4.00	4.00	4.00	4.00	4.00	969.00
8	Disaster Preparedness	12.50	12.50	43.74	48.27	80.94	82.92	88.00	32.78	35.58	35.58	34.10	506.92
9	Government and Public Offices	52.26	59.80	45.50	45.50	45.50	26.00	26.00	26.00	0.00	0.00	0.00	326.56
Total		1,310.76	1,830.90	1,117.47	1,056.92	899.86	374.31	365.90	315.28	280.79	349.31	446.11	8,249.45

## CONSULTATION AND ASSISTANCE TO BAC GOVERNMENT

- (28) The annual fund requirement for the respective sector is worked out in accordance with the During the course of the Additional Study, the team of the local consultant had a meeting with the Banda City government office, the representatives of the city parliament, BRR, BAPPEDA and the organizations concerned over 6 times. In the meeting various subjects were discussed in order to carry out the Additional Study smoothly and to incorporate the opinions of the city government, BRR and other organizations into various plans and concepts. The study team provided technical advices to the city government to facilitate the rehabilitation and reconstruction activities.

**FINAL REPORT  
FOR  
THE ADDITIONAL STUDY  
ON  
THE URGENT REHABILITATION AND RECONSTRUCTION PLAN (URRP)**

PREFACE

LETTER OF TRANSMITTAL

LOCATION MAP OF BANDA ACEH CITY-ACEH BESAR-SABANG

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
BAC	Banda Aceh City
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 &amp; 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 Pengaiaan 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 INTRODUCTION**

### **1.1 BACKGROUND OF ADDITIONAL STUDY ON URRP**

On August 13, 2005, there was a meeting in Banda Aceh City (BAC) to discuss about Final Report (Draft) on URRP among the representatives from BAPPENAS, PU Jakarta and Dinas, BRR, BAPPEDA province and City Government, Dinas Tata Kota, JICA Indonesia Office and other agency concerned and Mayor of Banda Aceh City. On the same day the Mayor and the representative of BRR requested to the JICA Indonesia office to continue technical assistance to elaborate (1) a long term vision, (2) a definite structure plan for BAC and (3) sector development program of BAC in addition to URRP (hereinafter referred to as “the Additional Study”).

In response to this request JICA decided to continue to extend its assistance to conduct the Additional Study and “Minutes of Meeting on Amendment of Scope of Work for the Urgent Rehabilitation and Reconstruction Support Program for Affected Areas in North Sumatra” was signed among the representatives of BRR, BAPPENAS, Provincial Government, JICA Indonesia Office and Banda Aceh City.

As one of the arrangements for the Additional Study, local consultant do hired as main actor to work in accordance within the scope of work for the Additional Study.

This Report on the Additional Study is prepared by the JICA Study Team on the basis of the report prepared and submitted by the local consultant.

### **1.2 OBJECTIVES AND SCOPE OF THE ADDITIONAL STUDY**

#### **1.2.1 Objectives**

The objectives of the Additional Study are set forth as follows:

- (1) Establish a long term vision for development of Banda Aceh City and its surrounding
- (2) Provide a detailed Banda Aceh City structure plan
- (3) Formulate immediate and short-term program for rehabilitation and reconstruction works in Banda Aceh City including cost estimate and annual fund requirement
- (4) Formulate and prepare layout plan for three (3) reconstruction model areas for future implementation

#### **1.2.2 Outlines of Scope of Work**

Details of the scope of work of are presented in ANNEX and their outlines are summarized herein below:

The structure plan shall include, but not limited to the following:

- (1) Define the concept of BAC Metropolitan Area

- (2) Create BAC as green city in conjunction with provision of more detailed mitigation plan against incoming Tsunami
- (3) Develop the concept of BAC as a cyber city
- (4) Develop conceptual structure of non-polluted and energy saving mass transit system
- (5) Create BAC free from flooding
- (6) Develop BAC for regional tourism
- (7) Designate a new land use for industrial zone
- (8) Formulate more detailed structure plan at the sea front area for tourism development and centers for fishery and agriculture industry, with due attention to conservation of aqua-ecology and disaster warning and mitigation aspects
- (9) Formulate and prepare outline plan and indicative cost estimate for three (3) reconstruction model areas

The Additional Study will produce the following outputs:

- (1) BAC and its surrounding urban development vision
- (2) BAC metropolitan area conceptual structure
- (3) BAC structure plan
- (4) Formulation of and layout planning for three (3) reconstruction model areas
- (5) Setting up of immediate and short program for rehabilitation and reconstruction works in BAC
- (6) Regular consultation and assistance to the BAC government

### **1.3 IMPLEMENTATION OF ADDITIONAL STUDY**

#### **1.3.1 Employment of Indonesian Consultant**

The Additional Study was actually conducted by the Indonesian Consultant, PT. Wiswakharman, which was procured through a local competitive bidding by the JICA Study Team. The contract was awarded to the said consultant in the day of 15<sup>th</sup> October, 2005. The Additional Study was then commenced from the same day and was completed by end of February, 2006 upon submission of its Final Report.

The JICA Study Team supervised the progress of the works and provided a technical advice from time to time to the Indonesian consultant. In the course of the Additional Study the local consultant prepared and submitted Inception Report, Interim Report and Draft Final Report as well as Monthly Progress Report. Draft Final Report was circulated to BRR and BAC government for their comment.

### **1.3.2 Final Product submitted by Indonesian Consultant**

The local consultant has prepared their final report incorporating the comments on the draft final report. The said final report comprises two (2) volumes as follows:

Volume 1	Main Report
Volume 2	Appendix
	Appendix A Present Condition of the Study Area
	Appendix B Formulation of Banda Aceh Metropolitan Development Concept
	Appendix C Proposed Banda Aceh City Structure Plan
	Appendix D Infrastructure Development
	Appendix E Planning on Three Model Reconstruction Areas

The above Volumes 1 and 2 are prepared as ANNEX.



## CHAPTER 2 PRESENT CONDITIONS OF THE STUDY AREA

### 2.1 LOCATION

The Study Area covers 2,866 km<sup>2</sup> over three (3) administrative areas: Sabang City, Banda Aceh City, and Aceh Besar Regency (ABR). Their areas are 119 km<sup>2</sup>, 61 km<sup>2</sup> and 2,686 km<sup>2</sup> respectively. BAC is the capital of Nanggroe Aceh Darussalam Province (NAD Province). ABR is divided into 22 districts and has its capital at Jantho about 60 km to southeast from BAC on beeline. Map of the Study Area is as presented in frontispiece. It is noteworthy that Sabang City is designated as “Economic Development Area” by Presidential Policy Letters No. 89 of Year 1996 and No. 9 of 1998, and further it is designated as “Free Trade and Port Area” in 2000.

### 2.2 SOCIO-ECONOMIC CONDITIONS

#### 2.2.1 Population and Employment

Population in the Study Area was 563,774 consisting of 235,523 in BAC, 301,746 in ABR and 26,505 in Sabang City in 2003. Population density in BAC was very high, 3,669 person/km<sup>2</sup>. BAC population accounts for 41 % of the whole population in the Study Area, whereas its area is only 2.1 % of the entire Study Area.

Population in BAC was reduced to approximately 190,000 after the 2004 disaster, and there are still more than 60,000 internally displaced people. It is a matter of urgent to provide housing facilities with basic lifeline to the people who wish to return to their original land. There were also casualties in Sabang City and ABR.

#### 2.2.2 Regional Economy

Gross Regional Domestic Products (GRDP) of BAC, ABR and Sabang City and their characteristics are as presented in Table 2.2.1.

Table 2.2.1 GRDP and Per Capita Income in 2002 in Study Area

Area	GRDP (without oil and gas) (Rp., billion)	Main Sectors and their Share in GRDP (%)		Per Capita Income (without oil and gas) (Rp., million)
		Most predominant	Second predominant	
BAC	992.66	Transportation: 33.21	Commercial and hotel: 21.85	3,325
ABR	1,509.98	Agriculture: 52.74	Manufacturing: 18.95	2,776
Sabang	142.63	Construction: 22.22	Commercial and hotel: 22.16	4,654

Source: BAC Dalam Angka, ABR Dalam Angka, Sabang Dalam Angka, 2003

BAC is the capital of NAD Province and also the center of administration, economy, culture and education. It is also hub of transportation and logistic in the region.

The per capita income of BAC is almost a half of the national average, indicating that the Study Area requires acceleration of its economic development for upgrading the level of living standard of the inhabitants.

## CHAPTER 3 FORMULATION OF BANDA ACEH METROPOLITAN CONCEPT

### 3.1 METHODOLOGY OF FORMULATION OF METROPOLITAN CONCEPT

The BAC government and BRR are in opinion that in order to reduce economic disparity between the BAC and its surrounding area and the other part of the country it is vital to place emphasis on various development activities. Having such principle in mind the BAC government and BRR strongly wish to establish a long term vision for development of BAC and its surrounding area and a conceptual plan for Banda Aceh Metropolis.

The formulation of the metropolitan development concept comprises five steps as shown in Figure 3.1.1.

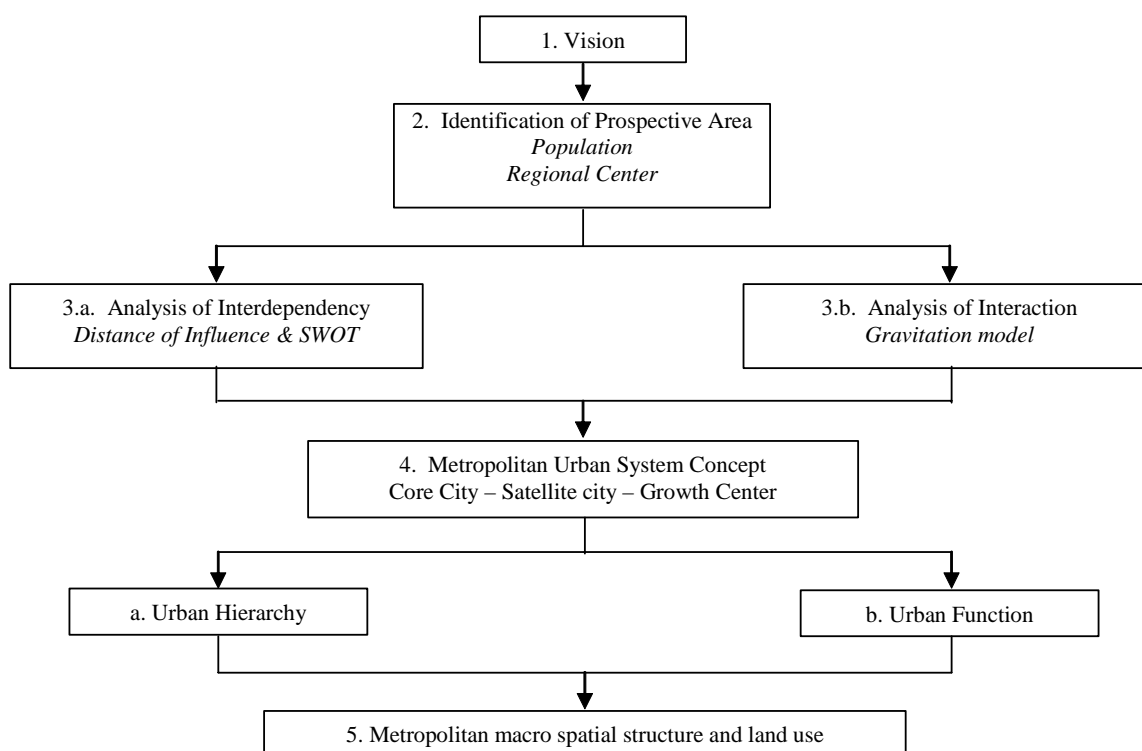


Figure 3.1.1 Procedures for Formulation of Metropolitan Concept

### 3.2 LONG TERM VISION

A long term vision is set forth as summarized below, paying attention to preservation of the prevailing tradition, culture and Islamic principle.

- (1) In accordance with the national and provincial policies, development of BAC will be directed to be economic, social, cultural and religious core in the North Sumatra and aims at creating various benefits and social and economic impacts to the surrounding areas of BAC.
- (2) BAC will be motivated to be northern international gateway of the country taking its

- (3) People shall be mitigated from possible future disaster.
- (4) The Study Area will continuously co-exist with the precious natural environment.

It is reported by URRP that population in BAC in would grow at average annual growth rate of 6% and reach at 254,000 in 2009. In the Additional Study population growth rate after 2009 is presumed to maintain the same figure until the year 2015, resulting in population in 2015 at 360,304.

Population in Sabang City and regional centers in ABR is assumed to grow at the average annual growth rate recorded during the period from 1999 to 2004. The 2015 population is 41,227 for Sabang City and 355,268 for the whole ABR.

### 3.4 INTERDEPENDENCY AND INTERDEPENDENCY ANALYSES

The interaction of BAC to the 22 regional centers in ABR was analyzed by using a gravitational model developed by “Geografi Wilayah, Geography UGM, 1997”.

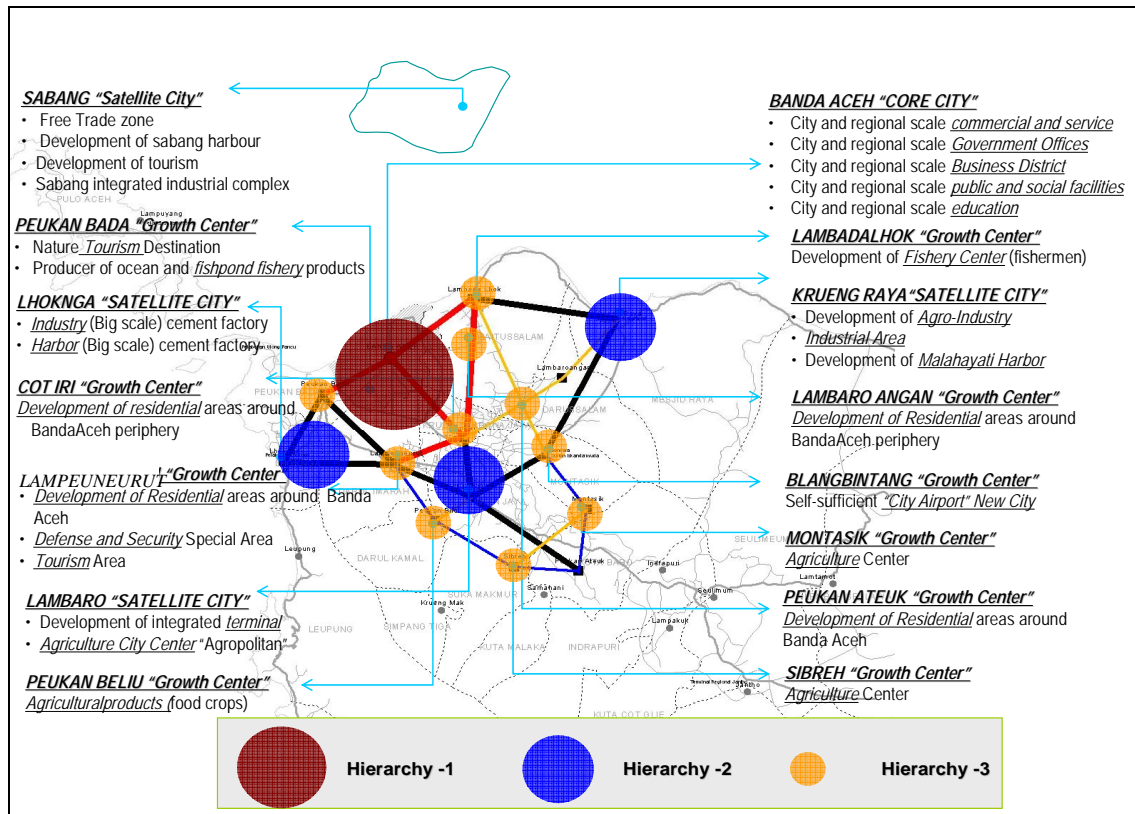
As a result, out of 22 pre-selected regional centers in ABR, 13 centers are identified having very to high interaction with BAC as shown in Figure 3.3.1. They are Lampeneurut, Lambaro, Peukan Ateuk, Montasik, Peukan Bada, Lambada Lhok, Lambaro Angan, Sibreh, Peukan Bilui, Cot Iri, Blang Bintang, Krueng Raya and Lhoknga.

Interdependency of BAC is then analyzed by using Indonesian mathematical model. As a result it is confirmed that the 13 screened regional centers are located within the distance of influence of BAC. In other means, those 13 regional centers would form part of the metropolis with BAC.

### 3.5 METROPOLITAN URBAN SYSTEM

As a concept, the Banda Aceh Metropolis comprises BAC, Sabang City and 13 regional centers in ABR, and each of them plays various functions and roles in an integrated system. The gross area is very wide, approximately 800 km<sup>2</sup>, aggregate of administrative areas of BAC, Sabang City and 13 districts of ABR, subject to further study for clear demarcation of the metropolis area. In view of their function and role, they are classified into a core city, satellite city and growth center as described below and Figure 3.5.1:

Core city	BAC will continuously act as a center of the government and other public services, commercial, education, culture in the region and also will be continuously a hub of transportation and logistics.
Satellite city	Sabang City, Lhokonga, Lambaro, and Krueng Raya will be designated as satellite city. They are even at present provided with strategic infrastructure such as airport and sea port and expected to play an important role in industrial and agro-industrial development in the metropolis.
Growth centers	Peukan Bada, Cot Iri, Lambaro Angan, Peukan Bilui, Lambada Lhok, Lambaro Angan, Montasik, Peukan Ateuk, Blang Bintang and Sibreh are designated to be growth center. They will act as receptacle of residential area with expansion of BAC, source of food supply for people and source of materials for agro-industry, supply of labors, etc.



Source: The Additional Study Team

Figure 3.5.1 Conceivable Metropolitan Urban System

The metropolis urban concept presented in this report is of conceptual nature. It is therefore recommended that more detailed study be conducted to materialize the metropolitan development plan.

### 3.6 MACRO SPATIAL STRUCTURE AND LAND USE

Metropolitan development would span over many years and it is hardly possible at this stage to predict how the development would progress and how the area would be transformed. It is however considered important to lay down a conceptual spatial structure and land use plan so that development activities would be implemented and adjusted as required in the context of such plan.

The gross area of the metropolis covers a vast area, approximately 800 km<sup>2</sup>, subject to further study in context of detailed development planning. Out of the whole area, 45% would be allocated to non-built-up area and the rest for development as shown in Figure 3.6.1.



## CHAPTER 4 BANDA ACEH CITY STRUCTURE PLAN WITH TARGET YEAR 2015

### 4.1 BASIC APPROACH

The 2004 disaster had caused various and serious destruction on human lives, properties, land resources, aqua-ecology, economic activities, etc. There is valuable data available from URRP, namely Tsunami Damage Assessment Map shown in Figure 4.1.1. This is one of benchmarks in formulation of rehabilitation and reconstruction program and a long term structure plan of BAC.

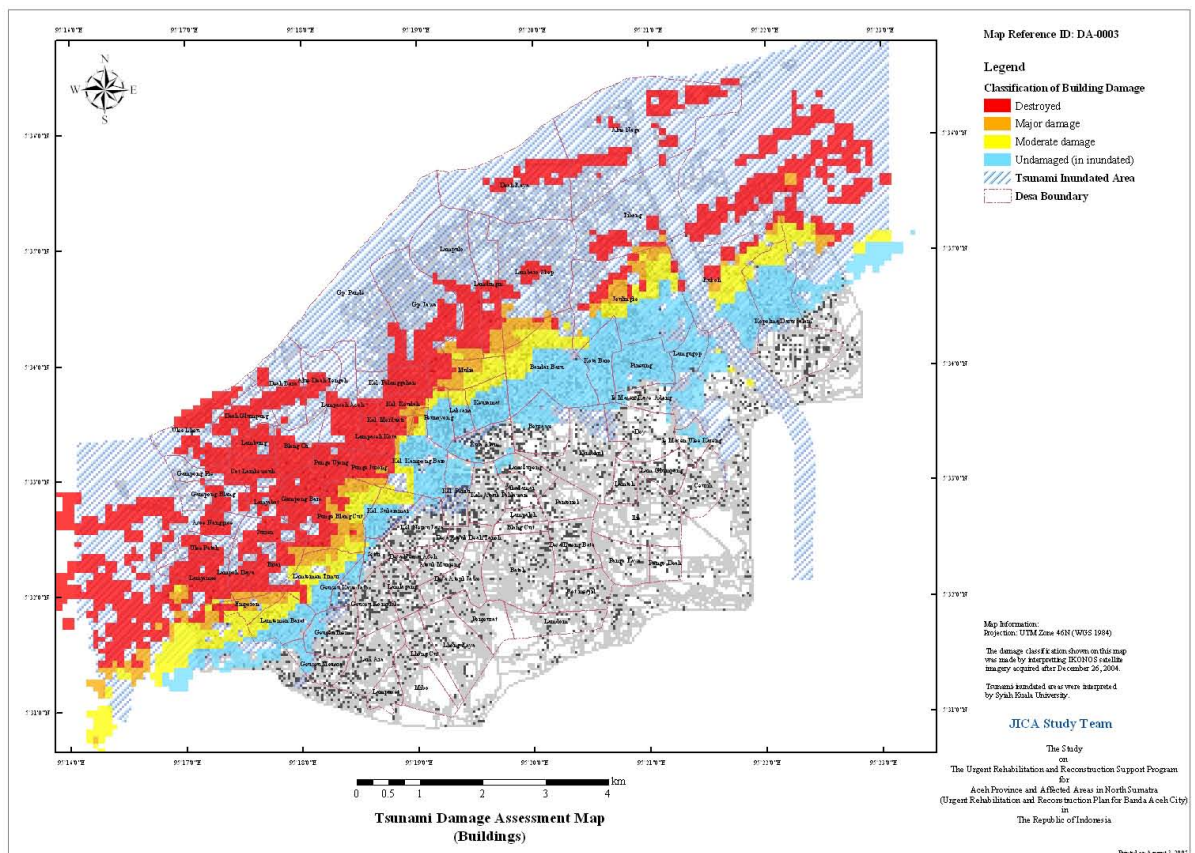


Figure 4.1.1 Tsunami Damage Assessment Map

URRP elaborated a city development concept, a spatial structure plan and sector development plan for the target year 2009. In compliance to the request of BRR and BAC government, the Additional Study aims at establishing the structure plan with extended target year, namely, 2015.

Along with extension of planning horizon, there are special themes to be taken into consideration in formulating the 2015 structure plan. They are (i) green city concept, (ii) promotion of urban tourism, (iii) cyber city concept, (iv) promotion of industrial development and (v) mass transport system (light railway transit, LRT). Prior to formulating the structure



plan, a preliminary survey was conducted to assess available resources and development potentials and then the results were incorporated into formulation of the concerned concept.

The infrastructure development plan of URRP is also reviewed in the light of the latest structure plan and rehabilitation and reconstruction works. As a result it is concluded that there is no need of change of development concept and plan in substance, excepting minor modification in alignment of a couple of roads.

## 4.2 POPULATION

Population in BAC was forecast until the target year 2015 as shown in Table 4.2.1 based on the same population growth rate as adopted in URRP.

Table 4.2.1 Forecast Population in BAC

District	2005	2009	2015
Meuraxa	5,661	5,683	8,061
Baitur-rahman	36,894	37,480	53,167
Kuta Alam	43,507	45,484	64,520
Ulee Kareng	20,196	37,658	53,418
Jaya Baru	11,362	11,417	16,195
Banda Raya	21,225	34,784	49,342
Lueng Bata	20,637	36,144	51,271
Syah Kuala	35,985	38,559	54,696
Kuta Raja	5,376	6,791	9,634
Total	200,843	254,000	360,304

Source: URRP and Additional Study Team

## 4.3 SPECIAL THEMES

### 4.3.1 Green City Concept

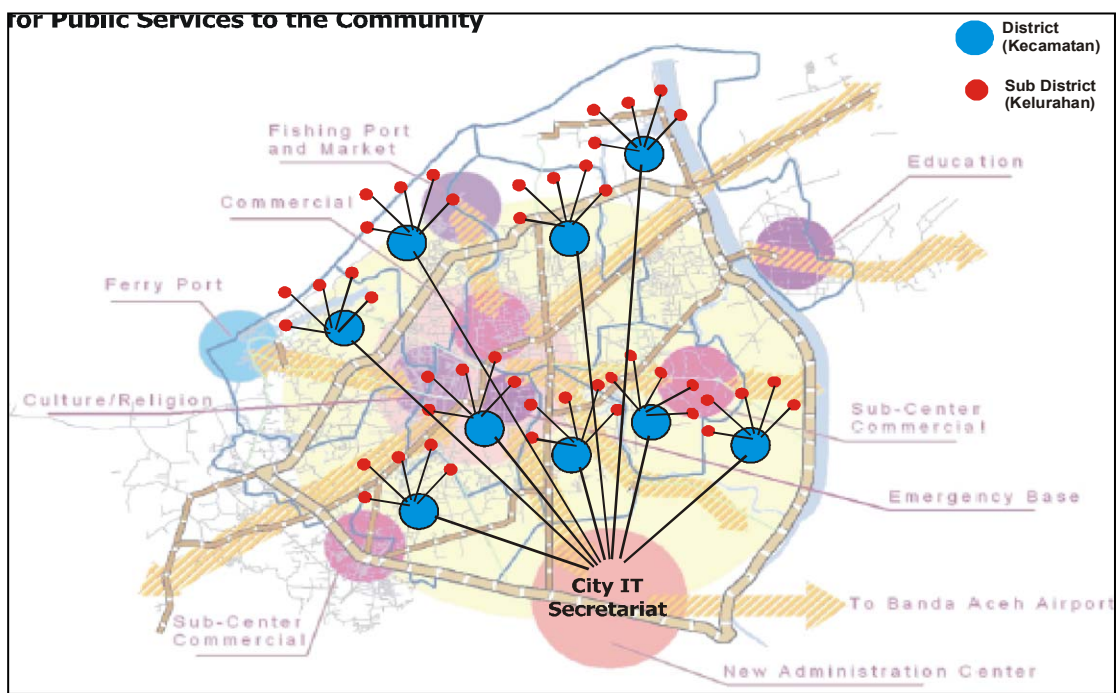
One of a long term vision is that BAC lives in harmony with the natural environment and this concept is introduced to achieve this mission.

There are four major elements in promoting the green city concept: they are (1) conservation, rehabilitation and revitalization of existing and damaged resources, (2) implementation of public hygienic facilities such as proper solid waste and waste water management, (3) legislative matter such as establishment and enforcement of regulations for organized and controlled land use, town development, building code, etc., and (4) emphasis on public awareness against conservation and preservation of natural and urban environment. The first element has been incorporated into the spatial structure plan.

#### 4.3.2 Cyber City Concept

This concept intends to transform BAC into an IT driven government service, education and economy. This concept is considered to be vital to upgrade the quality and rationalization of the government services, to allow the every citizen to access various information through global internet, and to create high technology industry and its related activities in order to accelerate economic development of BAC. These are as summarized below:

- ✓ Universal citizen access
- ✓ Cooperative sharing of network facilities among the public service entities (Government office, schools, libraries, hospitals, etc.)
- ✓ Improved government management, administration and service through improvement of skill and knowledge of the civil servants
- ✓ Increasing education level of potential labors to be ready to introduce high tech-industry
- ✓ Create more closer communication system among the government, the community and the private sector through online system
- ✓ Improved quality of life of the residents through provision of easily accessible disaster forecasting and warning system, and global data and information system



Source: The Additional Study Team

Figure 4.3.1 Conceptual Scheme of BAC Area Network

### 4.3.3 Tourism Development

It is expected that tourism industry would contribute to economy and employment in BAC. So far this sector has remained untapped and no tourism resources have so far reckoned qualitatively. Under the Additional Study preliminary investigation was conducted to identify potential tourism resources/spots in BAC.

Under the Additional Study, 6 package programs are preliminarily laid out as shown in Figure 4.3.2. It is recommended to conduct more deep study including assessment of potential tourists, provision of accommodation, provision of infrastructure including access to the spots, marketing etc.

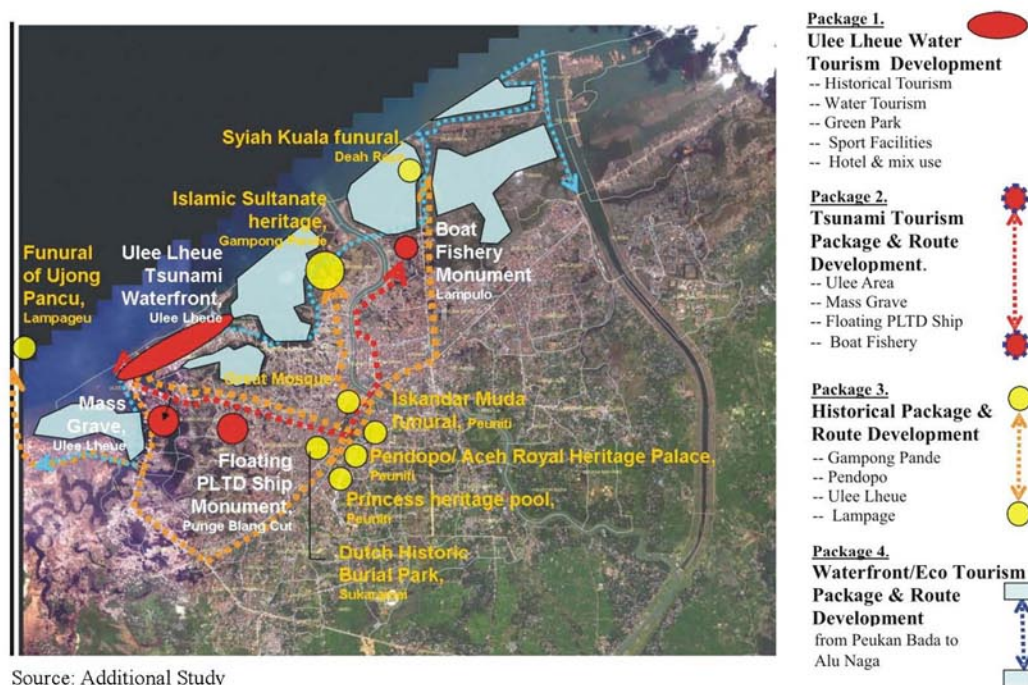
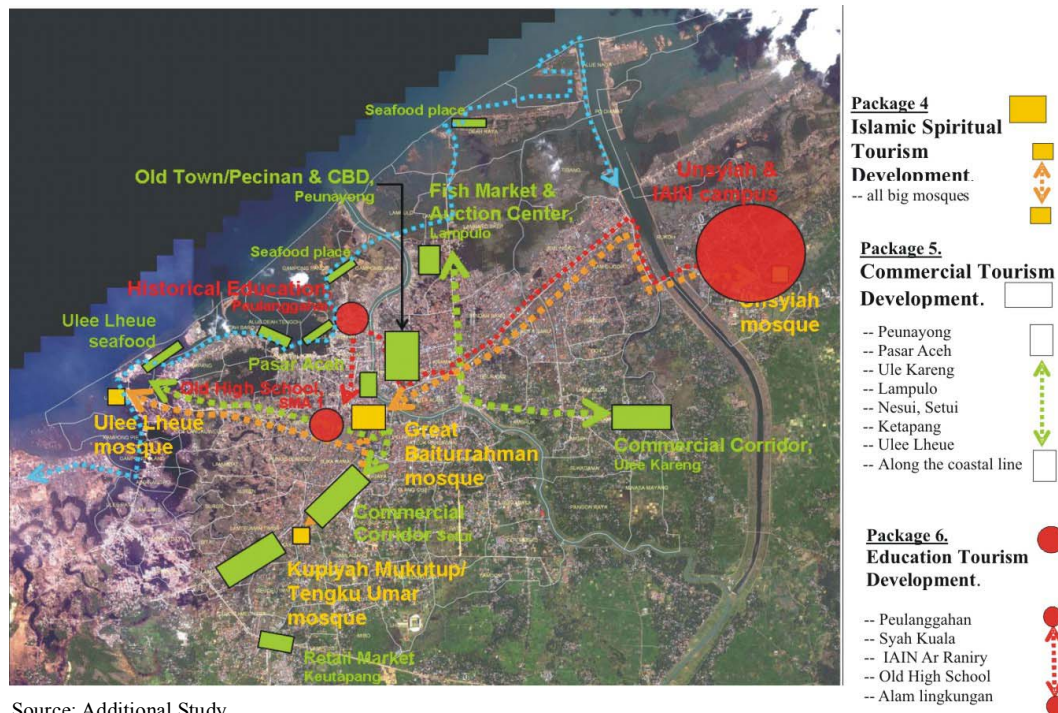


Figure 4.3.2 (1/2) Tourism Development Plan



Source: Additional Study

Figure 4.3.2 (2/2) Tourism Development Plan

#### 4.3.4 Industrial Development

There is unfortunately no major industry in BAC and its vicinity to date, excepting cement factory, though there are a large number of potential labors and sea ports at Sabang and Malahayati. It is supposed that lack of strategic resources and materials has hampered the development of industry in the area.

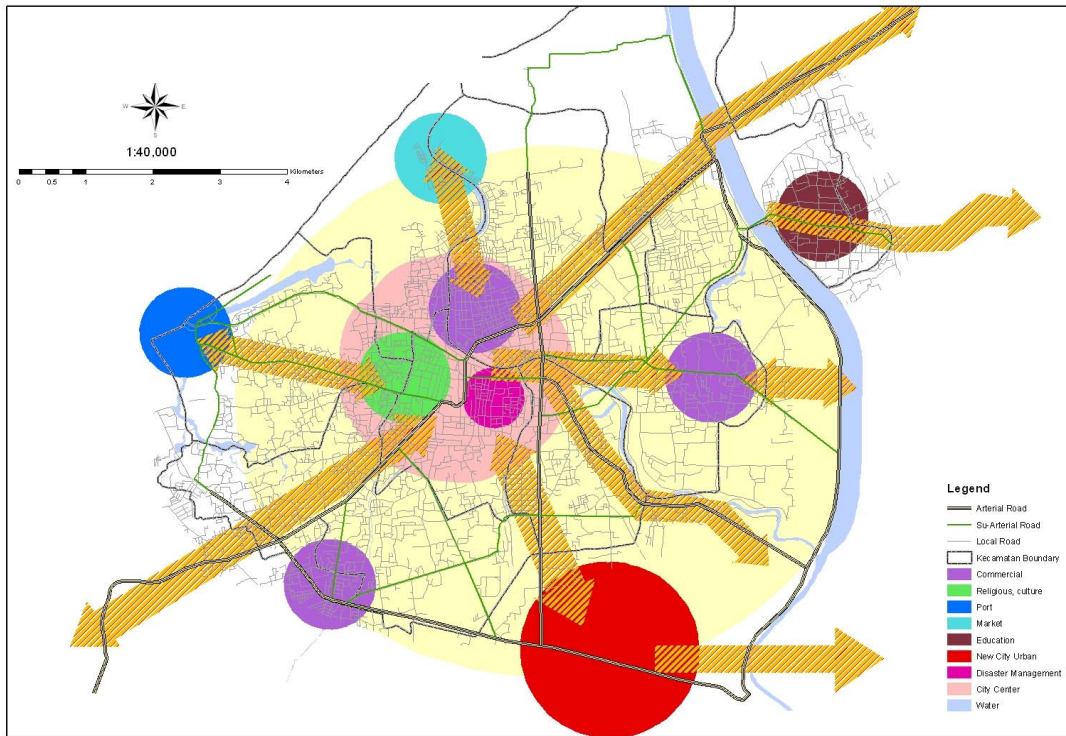
In order to catch up the level of livelihood and income in the region, the industrial development is one of conceivable measures. It is considered to be appropriate to concentrate industrial activities in Sabang and Malahayati, aiming at maximum use of existing infrastructure and incentive.

It is hardly possible to properly address to industrial development plan in a limited time. In order to materialize an industrial development plan, it is recommended to conduct such study and its results be included into the Banda Aceh Metropolis development plan.

#### 4.4 PROPOSED URBAN SYSTEM, HIERARCHY AND FUNCTION

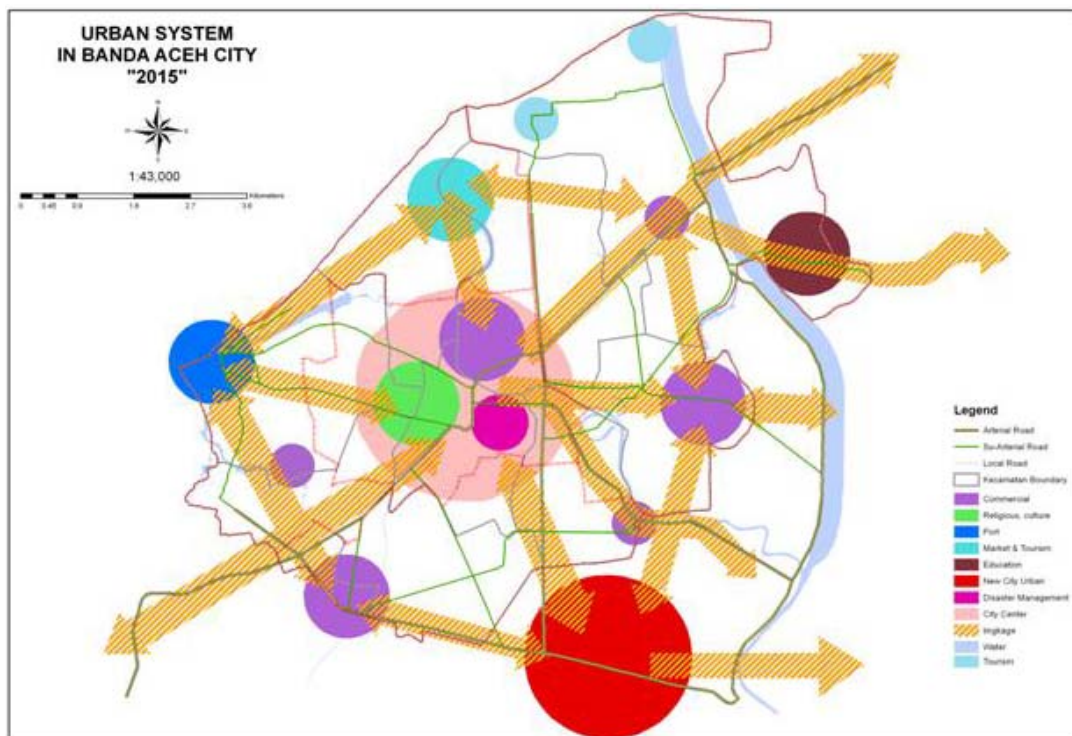
The urban system in 2015 remains almost the same as that proposed for the year 2009. However there is addition of 5 small centers in the 2015 plan. The urban system concepts in 2009 and 2015 are as shown in Figures 4.4.1 and 4.4.2.





Source: URRP

Figure 4.4.1 BAC Urban System and Function for 2009



Source: The Additional Study Team

Figure 4.4.2 BAC Urban System and Function for 2015

In the year 2015 plan, BAC urban system are broadly divided into (a) a city center planning

unit and (b) three (3) urban planning units (Ulee Lheue, Lueng Bata and Ulee Kareng). There are three (3) sub-units (City Center A, B and C) in the City Center Unit, one (1) sub-unit (Ulee Lheue A) in the Ulee Lheue unit, one (1) sub-unit (Leung Bata A) in Lueng Bata Unit, and two (2) sub-units (Ulee Kareng A and B) in the Ulee Kareng Unit. There are also four (4) sub-sub urban planning unit in total as shown in Figure 4.4.2.

According to the national and NAD provincial spatial policies, NAD Province is categorized in Development Area –A jointly with the North Sumatra, West Sumatra, and Riau Provinces. BAC is designated to be Order –II which acts as counter magnet to Medan City (Order-I). Within NAD, BAC is ranked at Hierarchy-1. BAC’s roles are assigned to be government center and office, social activity center, transportation and logistics hub and religious center.