CHAPTER 4 REHABILITATION AND RECONSTRUCTION PLAN

4.1 ROAD REHABILITATION AND RECONSTRUCTION PLAN

4.1.1 Roads in Most Devastated Areas

(1) Arterial road

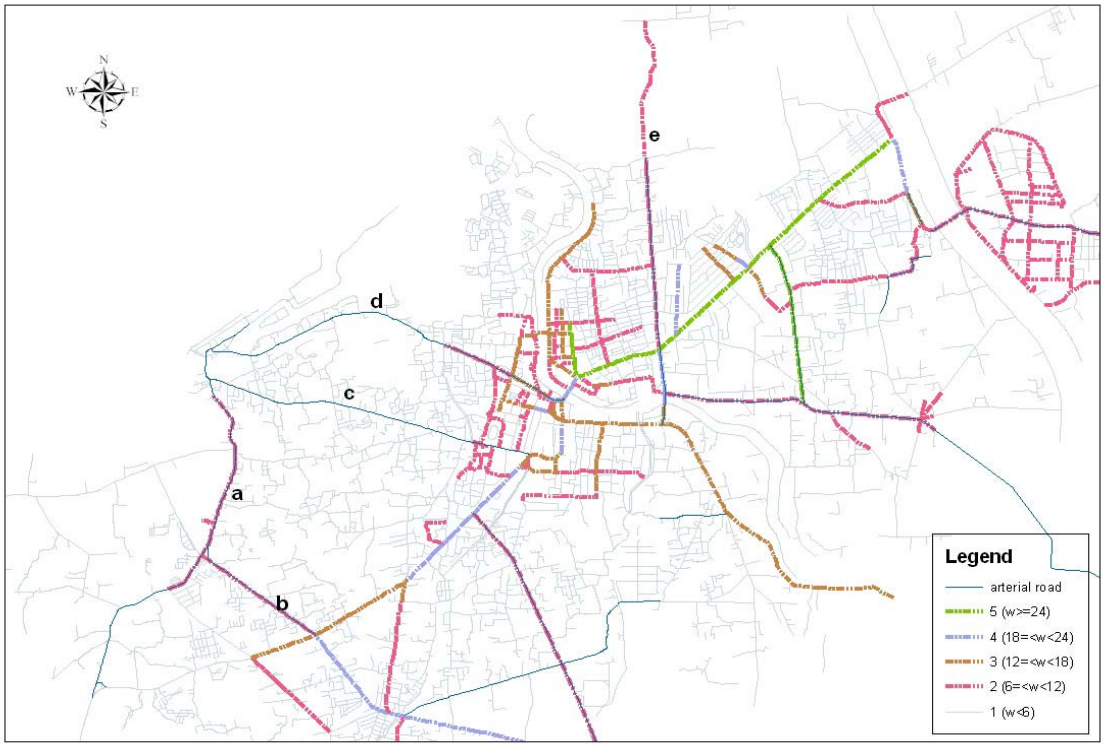
Through the investigation of the arterial roads the following 5 roads are judged to be rehabilitated in conjunction with bridge rehabilitation urgently as possible.

Table 4.1 Damaged Arterial Roads

ID	Roads	Road Width	Bridge condition	
A-a	JL. Lhoknga	6-12m	Lamjame	Heavily damaged
A-b	JL. TGK. ABD Rahman Meunasah Mencab	6-12m	-	
A-c	JL. Iskandar Muda	6-12m	Laguna I	Slightly damaged
			Punge I	Slightly damaged
A-d	JL. Habib Abdurrahman	Less than 6m	Laguna II	Fallen
			TitiTungkat	Heavily damaged
A-e	JL. Syiah Kuala	6-12m	Syiah Kuala I/II	Heavily damaged

Source: JICA Study team

The locations of the above roads are as shown in Figure 4.1.



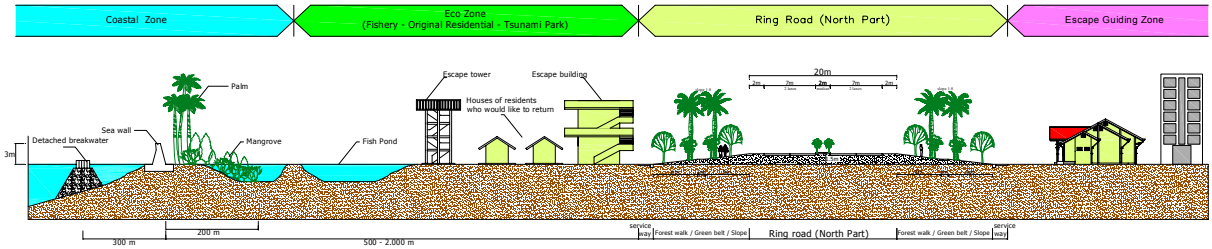
Source: JICA Study team

Figure 4.1 Rehabilitation and Reconstruction of Arterial Roads

(2) Ring road (north part)

The ring road (northern part) comprises part of the arterial roads and is proposed to be completed at earlier stage of rehabilitation and reconstruction. The functions of the road are as follows.

- It has the function as the arterial road where the Ulee Lheue port, the Meulaboh district, and the Krueng Raya port are connected.
- It has the bypass function to connect the sub city centers while making a detour.
- It has the function to activate an economic growth in the redevelopment area.
- It has the function as escape road and relief road while the rescue supply can be transported in case of emergency.



Source: JICA Study team

Figure 4.2 Schematic Section of Ring Road (North Part) and Coastal Area

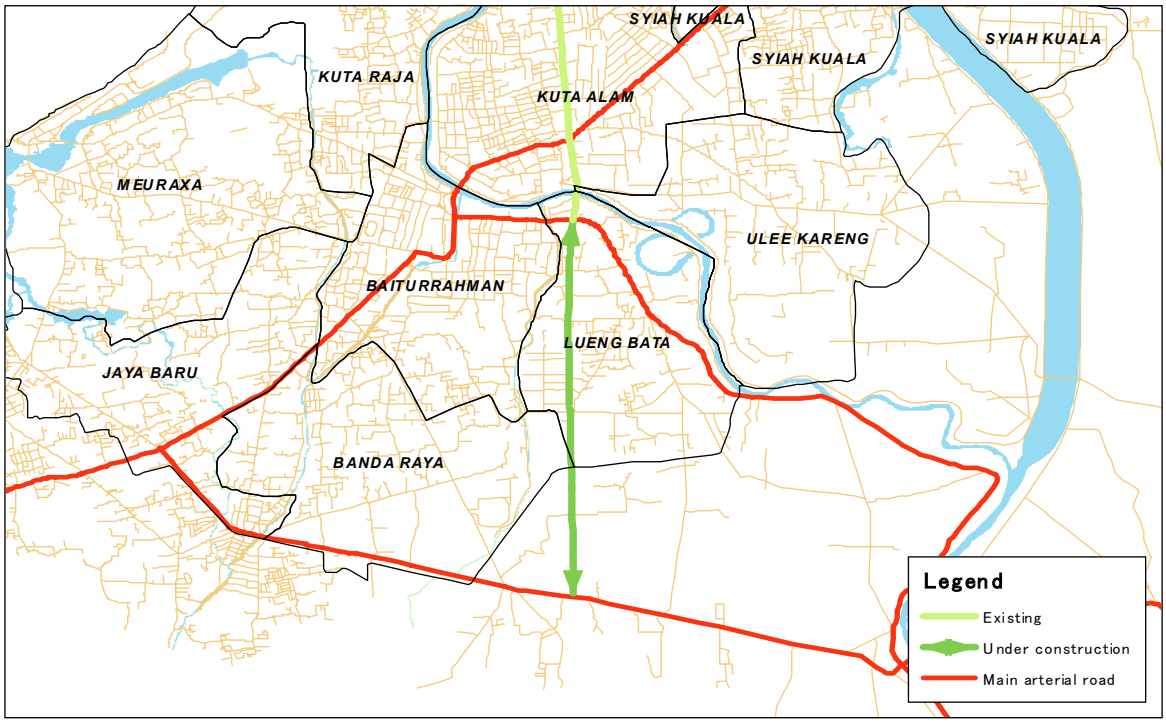
(3) Street

It is proposed to urgently restore the streets in both Kecamatan Meuraya and Kuta Raja. The total rehabilitation length is 57 km in Kecamatan Meuraya and 39km in Kecamatan in Kuta Jaya.

4.1.2 Roads in Less Devastated Area

(1) Extension of Jl. Syiah Kuala

Jl. Syiah Kuala lies between north part and center part and forms a part of arterial road. It is also designated to be integral part of main relief roads. The extension to connect to Jl. Soekarno Hatta is under construction. Layout of extension plan is as shown in Figure. 4.3.

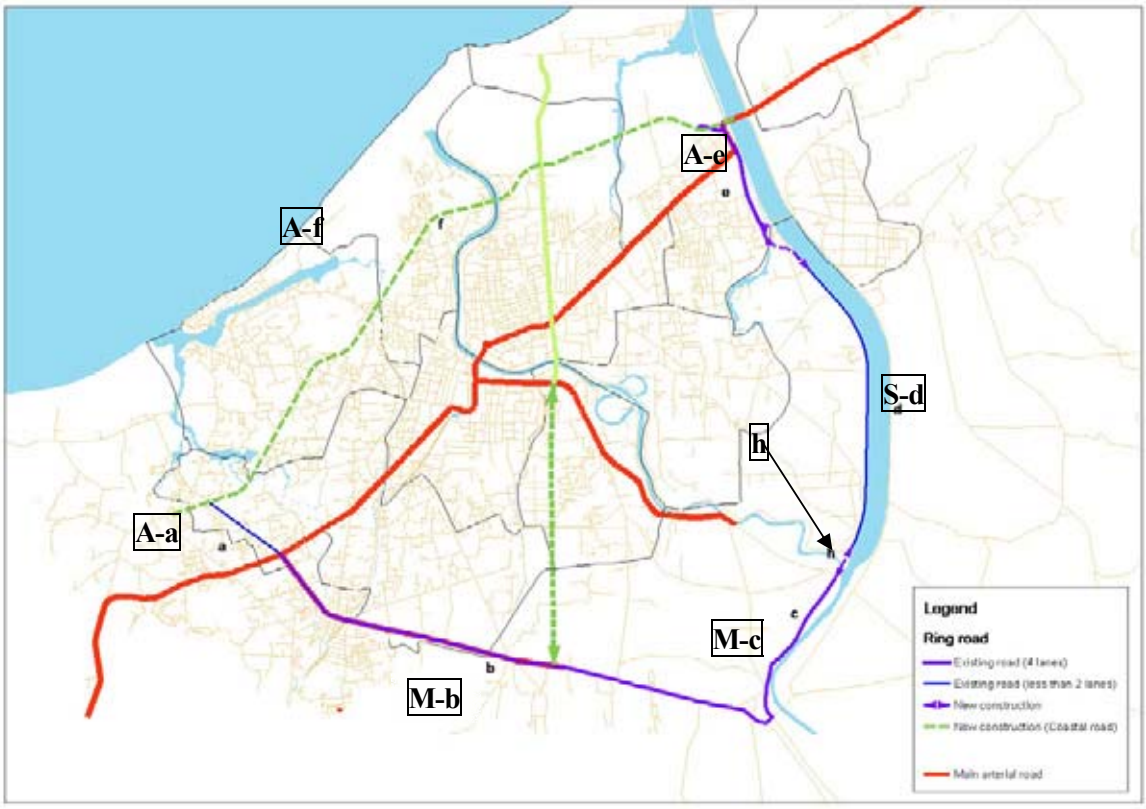


Source: JICA Study team

Figure 4.3 Extension of Jl. Syiah Kuala

(2) Ring road (south part)

This contemplated road consists of existing Jl. TGK. ABD Rahman Meunasah <A-a>, Jl. Soekarno Hatta <M-b>, Jl. Imum Lueng Bata <M-c>, the left bank road of Aceh floodway <S-d>, Jl. Laksamana Malahayati <A-e>, and road <A-f>. In order to complete the ring, the roads <M-c> and <S-d> are to be constructed including Bridge <h> as shown in Figure 4.4. It is necessary to expand the road width along the roads <A-a> and <S-d>.

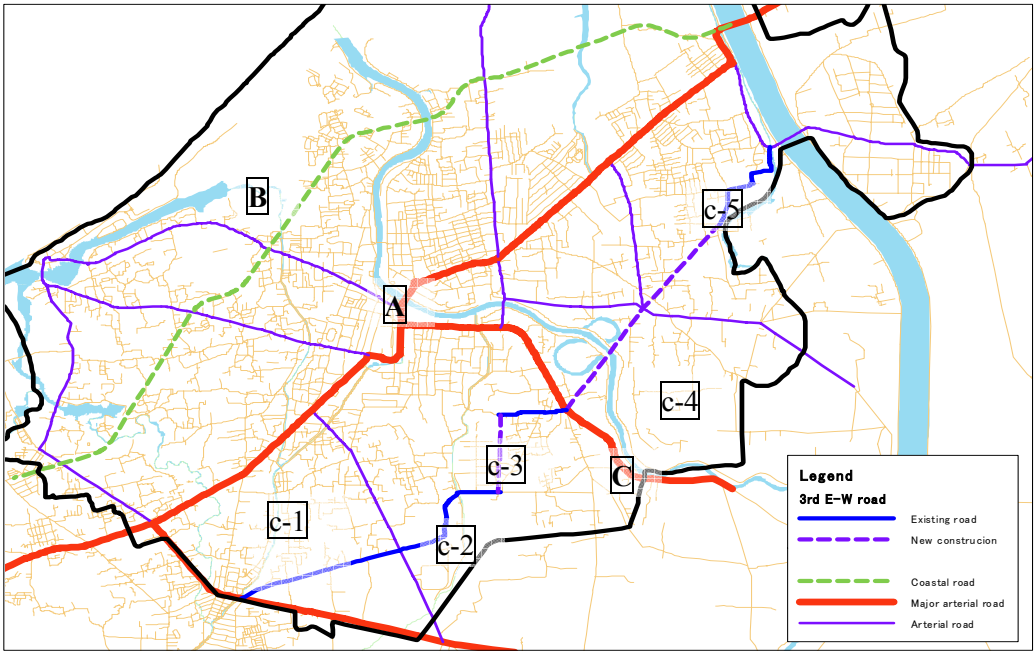


Source: JICA Study team

Figure 4.4 Ring Road

(3) Third east-west road

Refer to Figure 4.5, The third east-west road <C> is planned to run in parallel with the national roads <A> and in between the national road <A> and the ring road on the south. Now some links such as <c-1>, <c-3> and <c-5> should be widened. The link <c-4> should be newly constructed.



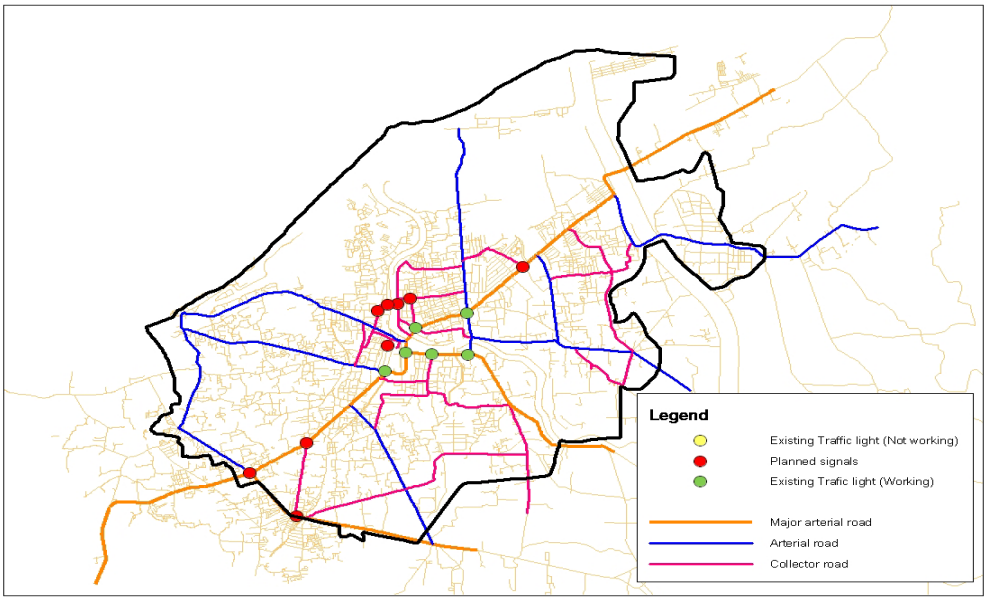
Source: JICA Study team

Figure 4.5 Third East-West Road

4.1.3 Road Safety Facilities

(1) Signal

Existing 9 signals which are not working now should be repaired. New signals should be installed on the 28 intersections such as crossing of main arterial roads and arterial roads, or crossing main arterial roads and collector roads, or crossing of arterial roads each other.



Source: JICA Study team

Figure 4.6 Location of Signals

(2) Traffic sign and road marking

Existing traffic signs are categorized into prohibition sign such as “No entry”, “No parking”, “No turn right”, and “No U-tern, and there is no “Speed limit” sign in Kota Banda Aceh. Broken 225 traffic signs should be fixed at first. Also it’s necessary to install the new road signs on the arterial roads and main intersections.

Moreover, road marking should be enforced. Also it’s necessary to re-paint road marking on the existing roads.

4.2 ROAD TRAFFIC FACILITIES REHABILITATION AND RECONSTRUCTION

4.2.1 Parking Lot

It is considered necessary to assign the “no parking” sections on the arterial roads which have a limited width. It is considered necessary to guide to provide enough parking lot when new buildings are to be constructed.

4.2.2 Car Inspection Place

There is one car inspection place in Banda Aceh City. About 400 cars are inspected every month, covering such items as brake, lamp, wiper, tires and smog emission. Car inspection place will be needed in the future because public transport vehicles will be increased and inspection for the private cars will also be required to ensure safety and environmental conservation.

4.2.3 Bus Terminal and Truck Terminal

The road around the PMABS terminal is used as the temporarily bus terminal, because the Labi-labi terminal was destroyed. It will be necessary to rebuild the Labi-labi terminal and construct new terminal.

The plan to construct intercity bus terminal on Jl. Soekarno Hatta by BAPPEDA should be promoted to improve intercity and city bus network. Moreover it is advisable to move the truck terminal outside of ring road in the future.

4.3 REHABILITATION AND RECONSTRUCTION OF FERRY TERMINAL

The ferry service is most important means of transport for the people and economic development of isolated islands. In July 2005 it is reported that the Australian Government committed for reconstruction of this ferry terminal. It is therefore no planning is made in this report.

CHAPTER 5 PRELIMINARY COST ESTIMATE AND IMPLEMENTATION PLAN

5.1 PRELIMINARY COST ESTIMATE

It is proposed to implement the following the rehabilitation and reconstruction works for road and road traffic facilities: Their location is presented in Figure 5.1.

Table 5.1 Proposed Rehabilitation and Reconstruction Works for Roads and Road Traffic Facilities

No.	Works	Work Items	Features of Works
R1: Road			
R1-1	Rehabilitation of arterial road	JL. Lhoknga (including Lamjame bridge)	Road: 2.6km; Bridge: 33m
		JL. TGK. ABD Rahman Meunasah Mencab	Road: 1.6km
		JL. Iskandar Muda (including Punge I, Laguna I bridge)	Road: 3.6km; Bridge: 80m
		JL. Habib Abdurrahman (including Titi Tungkat, Laguna II bridge)	Road: 3.7km; Bridge: 56m
		JL. Syiah Kuala (including Syiah Kuala I/II bridge)	Road: 3.9km; Bridge: 43m
R1-2	Rehabilitation of sub-arterial and other roads	Roads in the city	Road: 165.1 km
R1-3	Construction of coastal road (Ring road, north part)	Road construction with bridges, road facilities and drain facilities (box culvert etc.)	Road: 10.2km, (20-25m wide, 1.5m elevation, 5-15m slope both sides), Bridge: 150m
R1-4	Extension of Jl. Syiah Kuala	Road construction	Road: 4 km
R1-5	Improvement of escape roads	Road improvement	Road: 6 km
R1-6	Completion of the ring road and construction of new arterial roads (including 3rd east-west road)	Road and bridge construction	Road: , Bridge
R2: Traffic Safety Facilities			
R2-1	Reconstruction of traffic management systems	Signals Traffic signs Road marking	9 signals 225 traffic signs 6km road marking
R2-2	Improvement of signals	Signals	28 signals
R3: Road Traffic Facilities			
R3-1	Reconstruction of bus (labi-labi) terminal	Construction of bus terminal (building, traffic management, utilities)	Area: 34,000 m^2
R3-2	Construction of vehicle inspection center, bus terminal and truck terminal		Area: 50,000 m^2
R4: Ferry Terminal			
R4-1	Reconstruction of ferry port	To be implemented by Australian Government	-

Source: JICA Study team

The preliminary cost estimate is made under the conditions and assumptions set forth below:

(1) Physical contingency and price escalation are assumed to be 10 % each of the direct construction cost.

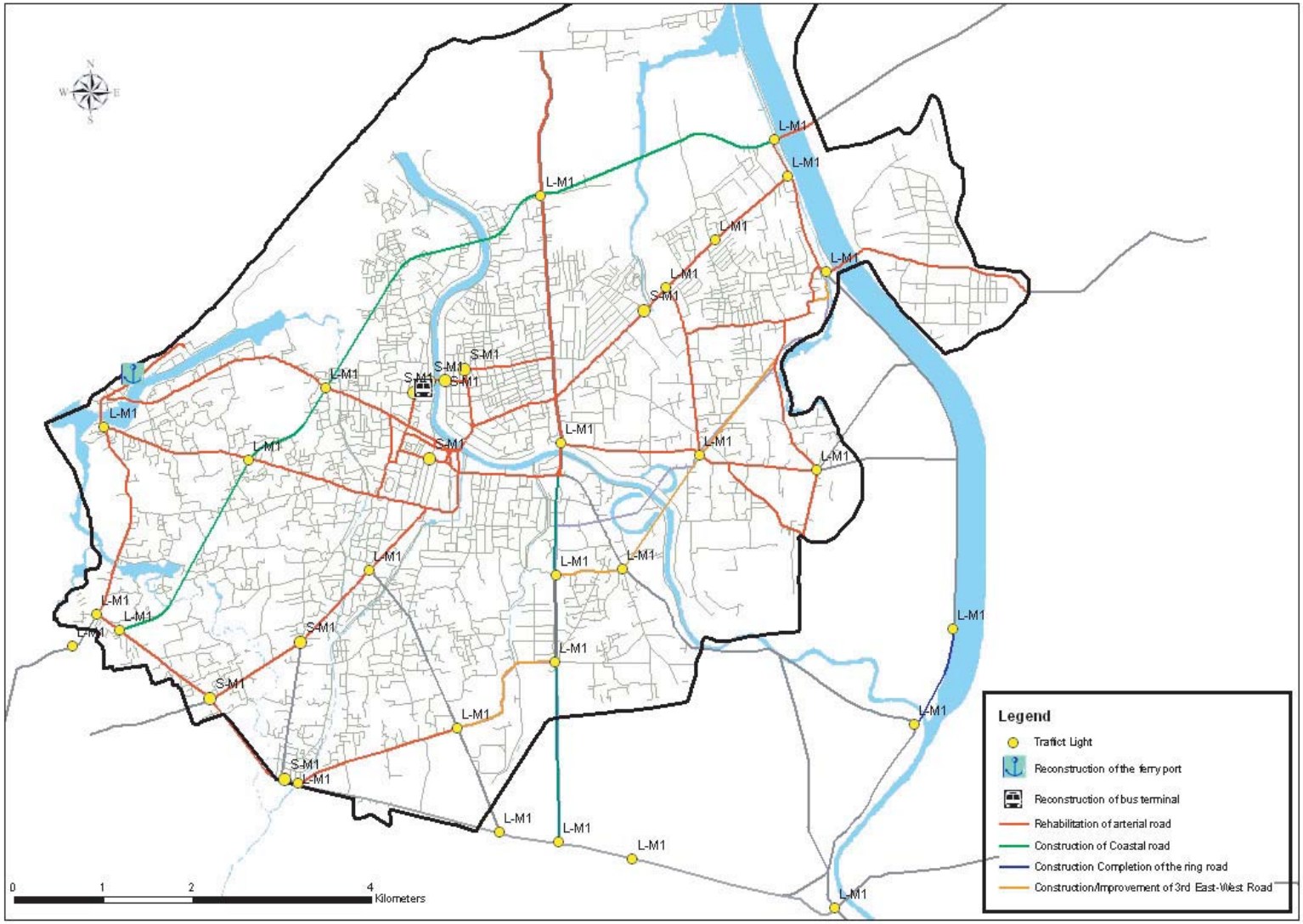
(2) Engineering service is assumed to be 10 % of the direct construction cost for detailed study & design and construction supervision.

(3) If project is purely program type and/or procurement, only price contingency is considered.

(4) VAT is included in the cost, however, import duties are not included in the cost.

(5) Land acquisition and compensation costs are not included in the Project cost due to difficulty of estimation at this time

(6) Unit construction cost is assumed for the respective work items as tabulated in Table 5.2.



Source: JICA Study team

Figure 5.1 Location of Proposed rehabilitation and Reconstruction Works

Table 5.2 Assumed Unit Prices

(Unit: Rp, million)

Work Items	Unit	Price
New road construction on the embankment	km	10,967
New road construction over the swamp (The soil should be improved after the reclamation)	km	21,091
New road construction on the land	km	8,437
Widening of 2 lanes	km	5,062
Reconstruction of roads	km	2,531
New construction of bridge	m^2	15.19
Reconstruction of bridge(heavily damaged)	m^2	7.59
Reconstruction of bridge(slightly damaged)	m^2	3.37
Installation of signal	point	253
Repair of signal	point	127
Installation of traffic sign	point	5.06
Road marking	km	152
Construction of bus terminal	m^2	1.43

Source: JICA Study team

Based on the above conditions, assumptions, unit prices and proposed rehabilitation and reconstruction works, the project cost is estimated as shown in Table 5.3.

Table 5.3 Preliminary Cost Estimate for Road and Transport

Category		Cost Items	Works	Amount (Rp.Mil)
R1. ROAD				
R1-1 Rehabilitation of Arterial Roads	Arterial Road	Direct Construction Cost	JL. Lhoknga (including Lamjame bridge)	7,583
			JL. TGK. ABD Rahman Meunasah Mencab	4,050
			JL. Iskandar Muda (including Punge I, Laguna I bridge)	11,744
			JL. Habib Abdurrahman (including Titi Tungkat,	14,224
			JL. Syiah Kuala (including Syiah Kuala I/II bridge)	13,219
	Bridges		Lamprit Bridge (on the JL. H.M. Daud Beureueh)	1,778
			Peunayong Bridge (on the JL. Supratman)	5,852
		Physical Contingency		5,845
		Price Escalation		5,845
		Engineering Services		5,845
			Sub-total	**75,984**
R1-2 Rehabilitation of Sub-arterial and other Roads		Direct Construction Cost	Damaged Sub-arterial and other Roads	417,860
		Physical Contingency		41,786
		Price Escalation		41,786
		Engineering Services		41,786
			Sub-total	**543,218**
R1-3 Construction of Coastal Road		Direct Construction Cost	On Land Section	80,611
			Swamp Section	59,477
			Bridge Section	40,394
			Expansion of Existing Road	9,516
		Physical Contingency		19,000
		Price Escalation		19,000
		Engineering Services		19,000
			Sub-total	**246,998**
R1-4 Extension of Jl. Syiah Kuala		Direct Construction Cost	Extension of Syiah Kuala Street	33,746
		Physical Contingency		3,375
		Price Escalation		3,375
		Engineering Services		3,375
			Sub-total	**43,870**
R1-5 Improvement of Existing Roads for Escape Road		Direct Construction Cost	3 Escape Roads	15,186
		Physical Contingency		1,519
		Price Escalation		1,519
		Engineering Services		1,519
			Sub-total	**19,741**
R1-6 Construction of New Arterial Road (including completion of ring road and 3rd east-west road)		Direct Construction Cost	<c-1> <c-3>(Expansion) (See Figure 6.6.10)	13,718
			<c-2> (Expansion, Including one Bridge)	22,272
			<c-4> <c-5> (Newly Construction including one Bridge)	118,027
		Physical Contingency		15,402
		Price Escalation		15,402
		Engineering Services		15,402
			Sub-total	**200,222**
R2. TRAFFIC SAFETY FACILITIES				
R2-1 Reconstruction of Traffic Management		Direct Construction Cost	9 Signals	1,139
			225 Traffic Signs	1,139
			6km Road Marking	911
		Physical Contingency		319
		Price Escalation		319
		Engineering Services		319
			Sub-total	**4,146**
R2-2 Improvement of Signals		Direct Construction Cost	New Installation of 28 Signals	7,087
		Physical Contingency		709
		Price Escalation		709
		Engineering Services		709
			Sub-total	**9,213**
R3. ROAD TRAFFIC FACILITIES				
R3-1 Reconstruction of Bus Terminal		Direct Construction Cost	Reconstruction of Bus (Labi-labi) Terminal (34,000m2)	48,763
		Physical Contingency		4,876
		Price Escalation		4,876
		Engineering Services		4,876
			Sub-total	**63,392**
R3-2 Provision of Bus Terminal, Snspection Center and Truck Terminal		Direct Construction Cost	Construction of Terminals and Inspection Center	71,700
		Physical Contingency		7,170
		Price Escalation		7,170
		Engineering Services		7,170
			Sub-total	**93,210**
R4. FERRY TERMINAL				
R4-1 Reconstruction of Ferry Terminal		Direct Construction Cost	Ulee Lheue Ferry Terminal	52,000
		Physical Contingency		5,200
		Price Escalation		5,200
		Engineering Services		5,200
			Sub-total	**67,600**
			Total	**1,367,593**

5.2 TENTATIVE IMPLEMENTATION PLAN

5.2.1 Priority for Implementation

The target years of rehabilitation and reconstruction works are set at 2007 and 2009 respectively. However there are a huge amount of works on roads, road traffic facilities and other such as ferry terminal、and corresponding investment requirement is estimated as large as Rp. 1,370 billion approximately. Mainly from financial point views it will therefore be rational and efficient to implement the sector development in a stage-wise way.

Two different development scenarios are set as summarized in Table 5.4.

Table 5.4 Development Scenario

Priority	Stage	Proposed Works
Scnario-1 (Realistic)		
1	Rehabilitation	Rehabilitation of arterial roads and bridges
		Rehabilitation of damaged sub-arterial and other roads
2	Reconstruction	Reconstruction of road safety facilities
		Reconstruction of bus (labi-labi) terminal
3	Long term	Construction of coastal road and extension of Jl. Syiah Kuala (north-south road)
		Completion of the ring road and construction of new arterial roads
		Construction of transportation facilities
Scenario-2 (Effectiveness of Transport)		
1	Rehabilitation	Rehabilitation of arterial roads and bridges
		Rehabilitation of damaged sub-arterial and other roads
2	Reconstruction	Reconstruction of traffic management systems and transportation facilities
		Reconstruction of bus (labi-labi) terminal
		Construction of coastal road and extension of Jl. Syiah Kuala (north-south road)
3	Long term	Completion of the ring road and construction of new arterial roads

Source: JICA Study team

Development Scenario-1 aims at concentrating on rehabilitation and reconstruction of pr-disaster existing facilities until end of planning horizon of 2009. Major new development works are therefore postponed beyond 2009. Development Scenario-2 is presented for consideration as an alternative and is presumed to be attractive to create a rational road traffic within the city in a short time.

It is however considered to adopt Development Scenario in order to achieve initial objectives of the rehabilitation and reconstruction of Kota Band Aceh.

5.2.2 Tentative Implementation Plan

On a basis of quantities of the proposed sector development plan implementation schedule is prepared for each development scenario as presented in Table 5.5(1/2) and (2/2).

Table 5.5(1/2) Implementation Plan of Road and Transport (Development Scenario-1)

Term	Rehabilitation		Reconstruction			Long-term	Organizati
Year	2005	2006	2007	2008	2009	2010-2015	on
R1-1 Rehabilitation of arterial roads							National Province City, PU
R1-2 Rehabilitation of sub-arterial and other roads							City, PU
R1-3 Construction of coastal road							City, PU
R1-4 Extension of Jl. Syiah Kuala							City, PU
R1-5 Improvemen of existing roads for escape road							City, PU
R1-6 Construction of new arterial road (including completion of ring road and 3rd east-west road)							City, PU
R2-1 Reconstruction of traffic management							City, PU
R2-2 Improvement of signals							City, PU
R3-1 Reconstruction of bus terminal							City, PU
R3-2 Provision of bus terminal, inspection center and truck terminal							City, PU
R4-1 Reconstruction of ferry terminal							MOC

Source: JICA Study team

Table 5.5(2/2) Alternative Implementation Plan of Road and Transport (Development Scenario-2)

Term	Rehabilitation		Reconstruction			Long-term	Organizati
Year	2005	2006	2007	2008	2009	2010-2015	on
R1-1 Rehabilitation of arterial roads							National Province City, PU
R1-2 Rehabilitation of sub-arterial and other roads							City, PU
R1-3 Construction of coastal road							City, PU
R1-4 Extension of Jl. Syiah Kuala							City, PU
R1-5 Improvemen of existing roads for escape road							City, PU
R1-6 Construction of new arterial road (including completion of ring road and 3rd east-west road)							City, PU
R2-1 Reconstruction of traffic management							City, PU
R2-2 Improvement of signals							City, PU
R3-1 Reconstruction of bus terminal							City, PU
R3-2 Provision of bus terminal, inspection center and truck terminal							City, PU
R4-1 Reconstruction of ferry terminal							MOC

Source: JICA Study team

* Costs for airport are not included.

5.3 ANNUAL FUND REQUIREMENT

The annual fund requirement is estimated for proposed Development Scenario as given in Table 5.6. It is resulted that approximately 45% of the total investment requirement concentrates in two (2) years of rehabilitation period. Such heavy concentration of investment is deemed unavoidable in order to restore roads and bridges to the pre-disaster state for the purpose of acceleration of the rehabilitation ad reconstruction activities as a whole.

Table 5.6 Annual Fund Requirement for Road and Transport Sector (Development Scenario-1)

Unit: Rp, billion

Term	Rehabilitation		Reconstruction			Long-term	Total
Year	2005	2006	2007	2008	2009	2010-2015	
R1-1 Rehabilitation of arterial roads	37.99	37.99					75.98
R1-2 Rehabilitation of sub-arterial and other roads	271.61	271.61					543.22
R1-3 Construction of coastal road						247.00	247.00
R1-4 Extension of Jl. Syiah Kuala						43.87	43.87
R1-5 Improvemen of existing roads for escape road			19.74				19.74
R1-6 Consturction of new arterial road (including completion of ring road and 3rd						200.22	200.22
R2-1 Reconstruction of traffic management				4.15			4.15
R2-2 Improvement of signals						9.21	9.21
R3-1 Reconstruction of bus terminal			31.69	31.70			63.39
R3-2 Provision of bus terminal, inspection center and truck terminal						93.21	93.21
R4-1 Reconstruction of ferry terminal			22.53	22.53	22.54		67.60
Sub-total	309.60	309.60	73.96	58.38	22.54	593.51	1,367.59
Total	619.20		154.88				

Source: JICA Study team

APPENDIX 6

HEALTH AND MEDICAL CARE

APPENDIX 6 HEALTH AND MEDICAL CARE

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CHAPTER 1 SITUATION ANALYSIS ON HEALTH SECTOR

1.1 PRE-TSUNAMI SITUATION

1.1.1 Health Condition

Health condition before the earthquake and tsunami disasters in NAD (Nanggore Aceh Darussalam) Province is described focusing on Banda Aceh City in this section with showing related indicators.

(1) Survival and Diseases

Indicators related to survivals are shown in the following table. Generally, health condition in Banda Aceh City might be different from the other districts in NAD Province, as usually the condition in urban areas is better than the rural areas.

Life expectancy rate in NAD Province was longer comparing to the national average. Infant mortality rate (IMR) and maternal mortality rate (MMR) in Banda Aceh City was quite lower than the national average. However, mortality rate of children under 5 years old (U5MR) in NAD Province was higher than the national average.

Table 1.1 Survivals in Banda Aceh and NAD

		Banda Aceh*1		NAD*2		Indonesia*3	
		Year		Year		Year	
Estimated Life Expectancy at Birth	(years)	n.a.		2001	69.7	2000-05	66.8
Infant Mortality Rate	(per 1,000 live births)	2003	7	2000	36	2002	33
Maternal Mortality Rate	(per 100,000 live births)	2002	114	1995	373	2000	230
Under 5 Mortality Rate	(per 1,000 live births)	n.a.		2000	69	2001	45

Note: NAD= Nangore Aceh Darussalam Province
Source: *1: Laporan Kegiatan Juni S/D 2004 (Annual Report for 2004), Banda Aceh City Health Office, 2004
*2: Profil Kesehatan Indonesia 2001 (Indonesia Health Profil 2001), Ministry of Health, 2002
*3: Human Development Report 2004, United Nations Development Programme (UNDP), 2004

As shown in the table below, infectious diseases and diseases related to nutrition and/or sanitation condition such as acute respiratory infection (ARI), diarrhea, skin diseases, tuberculosis and malaria were still popular in NAD Province as well as Banda Aceh City. However, hypertension was also one of major causes of morbidity.

Table 1.2 Major Causes of Morbidity in Banda Aceh City and NAD

	Banda Aceh City (2003)*1	NAD (2001)*2
1	Acute Respiratory Infection (ARI)	Acute Respiratory Infection (ARI)
2	Other respiratory diseases	Diarrhea
3	Muscular and nerve diseases	Hypertension
4	Skin infection	Malaria
5	Aerologic skin diseases	Tuberculosis
6	Hypertension	Dysentery
7	Scabies	Heart diseases
8	Stomach ulcer	Typhoid
9	Other digestive infection	Pneumonia
10	Diarrhea	Vascular diseases

Source: *1: Laporan Kegiatan Juni S/D 2004 (Annual Report for 2004), Banda Aceh City Health Office, 2004
*2: Profile Kesehatan Provinsi NAD 2001 (NAD Province Health Profile 2001), NAD Provincial Health Office, December 2002

(2) Maternal and Child Health

As presented in the table below, access to maternal and child health services in Banda Aceh City was better than provincial level and it might be one of key factors for low maternal mortality rate.

Table 1.3 Maternal and Child Health in Banda Aceh City and NAD in 2001

		Banda Aceh City	NAD
Number of pregnant women		5,751	105,145
Pregnant women receive prenatal check-up 4 times	(%)	91.9	75.1
Birth attended skilled birth attendant	(%)	86.4	66.2
Active Family Planning Acceptors	(%)	56.4	47.7
Low birth weight	(%)	0.1	0.5
Fully Immunized Children under one-year-old against Measles	(%)	87.3	72.1
Under-nutrition among children under 5 years old	(%)	16.4	22.4

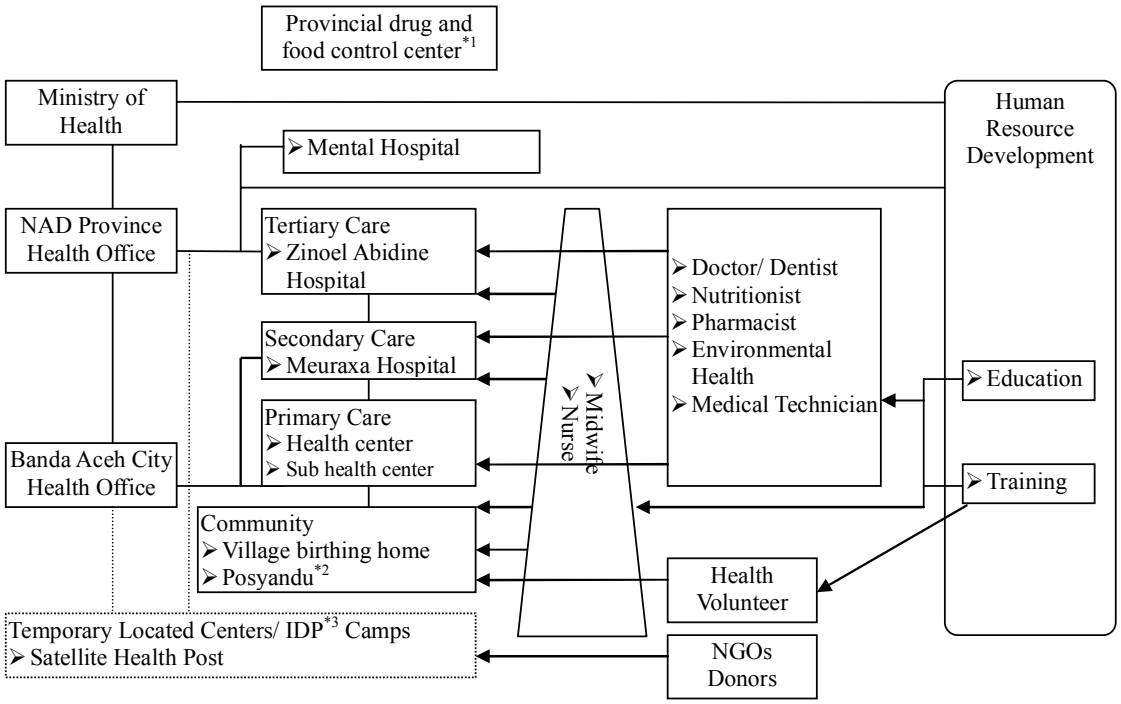
Source: Profile Kesehatan Provinsi NAD 2001 (NAD Province Health Profile 2001), NAD Provincial Health Office, December 2002

(3) Mental Health

Major causes of mental disorders were stress caused by economic difficulty, human relations and extremely experiences. In conflict areas, people have been suffered from trauma even before the disaster. Bed occupancy rate of Mental Hospital in Banda Aceh City was more than 200% in 2001, and average of recent years is around 130%. Because it is the only mental hospital and lower level heath facilities such as health centers or secondary hospitals could not provide sufficient mental health care and support. Period of inpatient was longer as patients could not go back their family or community because of stigma, difficulty in taking medicines and livelihoods, and insufficient supporting system in their community.

1.1.2 Health Service Providers

The following figure outlines the structure of public health service providers in Banda Aceh City. Other than the providers presented in the figure, lots of private health service providers such as private clinics are available in Banda Aceh City.



*1: Food drug and food control center is under National Agency of Drug and Food Control
*2: Posyandu= Integrated Health Service Post (Pos Pelayanan Terpadu =community primary health care and maternal and child health care services)
*3: IDP=Internal Displaced People

Figure 1.1 Outline of Health Service Delivery Structure

(1) Human resources

Health human resources in Banda Aceh City and NAD Province in 2001 are as shown in the following table. As mentioned in the previous section, because of concentration of private clinics and hospitals, number of doctors per 100,000 populations in Banda Aceh City was much higher than provincial average.

Table 1.4 Health Human Resources in Banda Aceh City and NAD Province (2001)

Category	Banda Aceh City		NAD	
	No.	Per 100,000 populations	No.	Per 100,000 populations
Doctors	47	21.1	325	7.8
Dentists	13	5.8	114	2.8
Specialist Doctors	27	12.1	77	1.9
Nurses	46	20.7	1,846	44.6
Midwives	68	30.5	5,710	137.9

Source: Profile Kesehatan Provinsi NAD 2001 (NAD Province Health Profile 2001), NAD Provincial Health Office, December 2002

(2) Primary care service facilities

As shown in the table below, private providers concentrated in Banda Aceh City. Accessibility to those facilities from the residents was better than other areas in NAD province because of road

network and public transportation, therefore, numbers of public primary health services facilities per 100,000 populations were less than other districts.

Table 1.5 Primary Care Service Facilities in Banda Aceh City and NAD Province

Category	Banda Aceh City		NAD	
	No.	Per 100,000	No.	Per 100,000
Private clinics (including dentists)[*1]	169	75.9	475	11.5
Health Centers[*1]	6	2.7	220	5.3
Sub Health Centers	21[*3]	9.0	802[*1]	19.4
Mobile Health Centers[*1]	6	2.7	194	4.7
Village Birthing Homes	44[*2]	19.8	2,495[*1]	60.2
Private Birthing Clinics[*3]	12	5.4	n.a.	n.a.

Source: *1: Profile Kesehatan Provinsi NAD 2001 (NAD Province Health Profile 2001), NAD Provincial Health Office, December 2002
*2: Kecamatan Dalam Angka (Sub-district statistical books) 2002, BPS Banda Aceh City, 2002
*3: Kondisi dan Permasalahan Prasarana/Sarana Kesehatan, Kebudayaan, dan Pariwisata Kota Banda Aceh Tahun 2004 (Condition and Problems of Infrastructure/ Facilities of Health, Culture and Tourism in Banda Aceh City in 2004), Banda Aceh City BAPPEA, December 2004

Major features of health centers and those networks (sub-health centers, posyandus and village birthing homes) in Banda Aceh City are shown in the table below. All health centers do not have any inpatient facilities because accessibility to hospitals is generally better than other areas. Cumulative visitors in health centers located in market areas such as Kuta Alam and Ulee Kareng were around 50,000 in 2003.

Table 1.6 Public Primary Care Service Providers in Banda Aceh City (2003)

(1/2)

HC=Health Center; SHC=Sub Health Center

Name	General Physicians	Dentists	Midwives	Nurses	Others	Total	Cumul. visitors	Pos-yandu	Village Birthing Home[*1]
Banda Raya									
HC Mibo	2	1	13	6	18	40	10,260	10	14
SHC Lamlagang	0	0	2	1	0	3	12,480	1	
Kuta Alam									
HC Kuta Alam	5	2	16	15	26	64	59,508	19	3
SHC Lampulo	0	0	1	1	0	2	9,180	2	
SHC Lambaro Skep	0	0	1	1	0	2	10,754	1	
Leung Bata									
HC Batoh	4	1	12	1	25	43	17,827	24	2
SHC Lueng Bata	0	0	1	1	1	3	18,166	3	
Meuraxa									
HC Meuraxa	2	1	18	18	21	60	18,063	31	8
SHC Blang Oi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
SHC Deah Baro	0	0	1	1	0	2	2,303	1	
SHC Laemjabat	0	0	1	1	0	2	9,268	1	
SHC Lampaseh	0	0	1	1	1	3	n.a.	2	
Syiah Kuala									
HC Kopelma	1	1	6	0	17	25	34,174	12	0
SHC Alue Naga	0	0	1	1	0	2	7,200	4	
SHC Daeh Raya	0	0	1	1	0	2	4,417	1	
SHC Lamgugob	0	0	1	1	1	3	6,055	1	
SHC Tibang	0	0	1	1	0	2	1,484	1	

Table 1.6 Public Primary Care Service Providers in Banda Aceh City (2003)

(2/2)

HC=Health Center; SHC=Sub Health Center

Name	General Physicians	Dentists	Midwives	Nurses	Others	Total	Cumul. visitors	Pos-yandu	Village Birthing Home*1
Ulee Kareng									
HC Ulee Kareng	3	1	12	16	19	51	49,577	9	0
SHC Lambhuk	0	0	2	2	0	4	10,786	1	
SHC Pango Raya	0	0	1	2	0	3	6,744	1	
Kuta Raja									
SHC Kampong Pande	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5
SHC Peulanggahan	0	0	1	1	1	3	18,000	1	
Batturrahman									
SHC Ateuk Jawo	0	0	1	1	0	2	12,870	1	0
SHC Ateuk Pahlawan	0	0	1	1	2	4	16,144	1	
SHC Blang Padang	n.a.	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.	
Jaya Baru									
SHC Lampoh Daya	0	0	3	2	0	5	8,917	1	12
SHC Lamtemen Timur	0	0	0	2	1	3	6,166	1	

Source: Kondisi dan Permasalahan Prasarana/Sarana Kesehatan, Kebudayaan, dan Pariwisata Kota Banda Aceh Tahun 2004 (Condition and Problems of Infrastructure/ Facilities of Health, Culture and Tourism in Banda Aceh City in 2004), Banda Aceh City BAPPEA, December 2004

*1: Kecamatan Dalam Angka (Sub-district statistical books) 2002, BPS Banda Aceh City, 2002

(3) Secondary and tertiary care

As shown in the table below, there were 26 hospitals and 2,190 beds in NAD Province and about 35% of hospital beds were in Banda Aceh City.

Table 1.7 Number of Major Hospitals and Beds in NAD Province and Banda Aceh City (2001)

( ) = number in Banda Aceh City*1

	Gov't	Private	Army	Total	Beds
General Hospitals	15 (3)	4 (2)	3 (1)	22 (6)	1,934 (629*2)
Maternal and Child Health Hospitals	0 (0)	3 (1)	0 (0)	3 (1)	130 (30)
Mental Hospitals	1 (1)	0 (0)	0 (0)	1 (1)	126 (126)
Total	16 (4)	7 (3)	3 (1)	26 (8)	2,190 (785*2)

Note: *2 Number of beds in Permata Hati Hospital is not included.

Source: Profile Kesehatan Provinsi NAD 2001 (NAD Province Health Profile 2001), NAD Provincial Health Office, December 2002

*1: Kondisi dan Permasalahan Prasarana/Sarana Kesehatan, Kebudayaan, dan Pariwisata Kota Banda Aceh Tahun 2004 (Condition and Problems of Infrastructure/ Facilities of Health, Culture and Tourism in Banda Aceh City in 2004), Banda Aceh City BAPPEA, December 2004

As shown in the table below, bed occupancy rates in each hospital in Banda Aceh City were not high except the mental hospital.

Table 1.8 Characteristics of Hospitals in Banda Aceh City

Name	Ownership		Clinical department (2001)						
	No. of bed		Bed occupancy rate (2001)	Average no. of outpatient (2001)	Major medical personnel(2001)				
	2001	latest			Medical Specia -lists	General Physi -cians	Den -tists	Nurses	Mid-wives
Dr Zainoel Abidin Hospital	Government (Province)		Polyclinic, Obstetrics and Gynecology, Surgery, Pediatrics, Dentistry, Psychological counseling, Family Planning, Physiotherapy, Emergency[*3]						
	350	300[*2]	59.7%	367/day	n.a.	n.a.	n.a.	n.a.	n.a.
KESDAM Hospital	Government (National Military)		(No data)						
	116	123[*2]	26.8%	31/day	n.a.	n.a.	n.a.	n.a.	n.a.
Meuraxa Hospital	Government (City)		Polyclinic, Obstetrics and Gynecology, Surgery, Pediatrics, Dentistry, Psychological counseling, Family Planning, Physiotherapy, Emergency						
	58	66[*1]	n.a.	45/day	6	9	5	26	14
Banda Aceh Mental Hospital	Government (Province)		Psychiatry						
	126	214[*1]	200.4%	229/day	1	9	3	30	3
Malahayati Hospital	Private		Emergency, Obstetrics and Gynecology, Family Planning/ Maternal and Child health						
	50	50[*2]	51.0%	6/day	5	11	0	18	4
Fakinah Hospital	Private		Emergency, Surgery, Obstetrics, Physiotherapy						
	55	60[*1]	26.7%	n.a.	1	7	1	47	
Permata Hati Hospital	Private		(no data)						
	n.a.	30[*3]	n.a.	n.a.	9	10	0	36	0
Harapan Bunda Maternal and Child Hospital	Private		Internal medicine, Obstetrics and Gynecology, Pediatrics, Surgery, Neurology						
	30	36[*1]	66.3%[*2]	n.a.	6	7	0	20	30

Source: Kondisi dan Permasalahan Prasarana/Sarana Kesehatan, Kebudayaan, dan Pariwisata Kota Banda Aceh Tahun 2004 (Condition and Problems of Infrastructure/ Facilities of Health, Culture and Tourism in Banda Aceh City in 2004), Banda Aceh City BAPPEA, December 2004
*1: Aceh Health Facility Mapping, WHO (http://www.acehhealthinfo.net/document.php?id=43; accessed on 5 May 2005)
*2: Informasi RS Propinsi NAD 2003 (Hospital Information of NAD Province 2003), NAD Health Office, 2003
*3: Provincial Health Office

1.2 POST-TSUNAMI SITUATION

1.2.1 Health Condition

Post-tsunami health condition is also described, however, based on fragmentary or descriptive information because integrated survey on post-tsunami health condition has not been carried out yet. Major relief activities are also outlined in this section.

(1) General Conditions

In post-tunami period, Ministry of Health, Provincial Health Office and WHO have been jointly monitoring incidence of major infectious diseases, such as diarrhea, malaria, measles, and acute respiratory infection (ARI), in the affected areas based on weekly reports from related agencies.

Table 1.9 Reported Morbidity of Infectious Diseases in the Affected Areas in Post-tsunami Period

Diseases	Trend
Acute watery diarrhea	The situation was the worst in 3rdweek (more than 2,000 cases were reported) and has been decreasing.
Bloody diarrhea	More than 100 cases were reported in 4th week and reported cases have been decreasing since then.
Malaria	The situation was the worst in 7th week (more than 100 cases were reported) and has been decreasing.
Measles	About 30 cases were reported in 3rd week and reported cases have been decreasing since then.
Acute respiratory infection	Over 3,000 cases were reported in 4 ~ 7th and 9th weeks. It is still major cause of morbidity.

Source: Mortality and Morbidity Weekly Surveillance Epidemiological Bulletins, MOH, WHO, 2005

Infectious diseases related to sanitary condition have been controlled. However, ARI is still popular, especially among internally displaced people not only young children but also adults. Because number of reports has been decreasing as demobilization of emergency relief agencies, it might be under reporting.

Many agencies such as donors and NGOs provide infectious disease control services, which are generally distribution of bed nets, anti-malaria spray, expanded immunization programs (EPI), and enhancement of diseases surveillance system.

(2) Maternal and Child Health

In post-tsunami period, access to maternal and child health services might be worse because of damages on related facilities such as community birthing homes, sub-health centers and health centers as well as loss of health personnel, especially midwives. Provincial/district/city health offices, donors and NGOs have been providing basic health services including primary medical care, preventive activities and nutrition support for internally displaced people, however it is difficult to maintain the coverage because people could move frequently.

According to the results of "Rapid Nutrition Assessment in Tsunami Affected Districts in NAD" conducted by UNICEF[1], nutrition status of children and women of reproductive age in Banda Aceh City is in moderate and preventive measures is required.

[1] Data was collected in February 22 to March 15, 2005 in 13 districts/ municipals.

Table 1.10 Nutrition Condition of Children and Women in the Affected Areas in Post-tsunami Period

	Banda Aceh City (Range)	Average in North coast*	Average in NAD
Prevalence of anemia among non-pregnant women of reproductive age	<25%	23.3%	n.a.
Prevalence of wasting (weight-for-height<-2SD) among preschool children (6-59 months)	10-15%	9.5%	11.4%
Prevalence of stunting (height-for-age<-2SD) among preschool children (6-59 months)	<40%	33.3%	38.1%
Prevalence of underweight (weight-for-age<-2SD) among preschool children (6-59 months)	<40%	35.7%	43.0%

Note: *=North coast area includes Banda Aceh City and Aceh Besar.
Source: Rapid Nutrition Assessment in Tsunami Affected Districts in NAD, UNICEF, 2005

Four hundred thousand (400,000)[2] mother and child health handbooks (modified Aceh version) have been distributed by UNICEF to all districts in NAD province. WHO and UNICEF are providing socialization on the handbook for provincial health office staff, health personnel in health centers, community midwives and health volunteers.

(3) Mental Health

In post-tsunami period, most of the survivors showed one or more of stress-related symptoms such as fear, panic, helplessness, emotional numbing, disbelief, confusion, nightmares and flashbacks, hyper-activity, fear of returning to original place, fear of water, fear of being inside a building, restlessness and fatigue[3]. Because post traumatic stress disorder (PTSD) might start several years after, long term, continuous and comprehensive follow up might also be necessary.

Numerous NGOs working in various sector including health education and community support have been providing various forms of mental care services or mental support for internally displaced people since the disaster. WHO is coordinating integrated mental health program focusing on community and primary care.

1.2.2 Health Service Providers

According to the results of damage and loss survey held by University of Indonesia, Damage and loss in health sector in NAD Province was estimated to be equivalent to Rp.852,928 million in total and 90% of it was damage on health facilities. Losses of human resources in health sector in NAD Province was estimated to be equivalent to Rp.3,033 million and 667 provincial health officers were dead or lost.

[2] According to Provincial Health Office, those are enough to distribute to pregnant women, mothers feeding under-5 children and related health personnel for one year.
[3] WHO Mental Health Assessment in Aceh, WHO, January 2005

(1) Health Human Resources

Health human resources could be lost because of the disaster. In Banda Aceh City, about 20% of staff in city health office and health centers was lost. In Meuraxa area, only 65% of pre-tsunami staff is remaining as shown in table below.

Table 1.11 Losses of Health Personnel in Banda Aceh City
(Health Office and Health Centers)

Institution	Before Tsunami (2004)	Victims	After Tsunami (% of pre-tsunami)
Banda Aceh City Health Office	85	17	68 (80%)
Kuta Alam Health Center	64	19	45 (70%)
Komplema Health Center	52	12	40 (77%)
Meuraxa Health Center	65	23	42 (65%)
Batoh Health Center	50	5	45 (90%)
Mibo Health Center	31	1	30 (97%)
Ulee Kareng Health Center	52	6	46 (88%)
Total	399	83	316 (79%)

Source: Banda Aceh City Health Office, May 2005

Health education facilities were also damaged. In medical department of Syah Kuala University, education and research activities have been hindered because equipment and teaching materials were damaged and lost. Some of school buildings of public health school were heavy damaged or destroyed. Teachers and instructors were also lost and some of students could not continue their study because of financial difficulty.

(2) Primary Care Services

Damages of health centers and sub-health centers caused by the disaster are shown in the following tables and figure.

Table 1.12 Damage of Primary Care Service Facilities in Banda Aceh City
(as of March 2005)

	2004[*1]	Damaged[*2]	Destroyed[*2]
Health Centers	6	2	1
Sub Health Centers	21	2	11
Village Birthing Homes[*3]	44	n.a.	n.a.

Source:
*1: Kondisi dan Permasalahan Prasarana/Sarana Kesehatan, Kebudayaan, dan Pariwisata Kota Banda Aceh Tahun 2004 (Condition and Problems of Infrastructure/ Facilities of Health, Culture and Tourism in Banda Aceh City in 2004), Banda Aceh City BAPPEDA, December 2004
*2: Damage Assessment Result of Health Center, March 2005
*3: Kecamatan dalam angka (Sub-district statistical books) 2002, BPS Banda Aceh City

Health center and its network in Meuraxa sub-district some sub-health centers located in coastal areas in other sub-districts were totally destroyed. Those might to be relocated in accordance with spatial plan for rehabilitation and reconstruction of Banda Aceh City because most of those locations in pre-tsunami period are planned to be buffer zone or green belt and population density might be lower than pre-tsunami period.

Table 1.13 Post-Tsunami Condition and Rehabilitation/ Reconstruction Needs of Health Centers and Sub-health Centers in Banda Aceh City (as of March 2005)

HC=Health Center; SHC=Sub Health Center

Name	Condition*1	Needs*2	Name	Condition*1	Needs*2
Banda Raya			Jaya Baru		
HC Mibo	Good		SHC Lampoh Daya	Destroyed	reconstruction
SHC Lamlagang	Good		SHC Lamtemen Timur	Damaged	rehabilitation
Batturrahman			Ulee Kareng		
SHC Ateuk Jawo	Good		HC Ulee Kareng	Good	
SHC Ateuk Pahlawan	Good		SHC Lambhuk	Good	rehabilitation
SHC Blang Padang	n.a.		SHC Pango Raya	Good	
Kuta Alam			Meuraxa		
HC Kuta Alam	Heavy damaged	rehabilitation	HC Meuraxa	Destroyed	reconstruction
			SHC Blang Oi	Destroyed	reconstruction
SHC Lambaro Skep	n.a.	rehabilitation	SHC Deah Baro	Destroyed	reconstruction
			SHC Laemjabat	Destroyed	reconstruction
SHC Lampulo	Destroyed	reconstruction	SHC Lampaseh	Destroyed	reconstruction
Syiah Kuala			Leung Bata		
HC Kopelma	Heavy damaged	rehabilitation	HC Batoh	Good	
SHC Alue Naga	Destroyed	reconstruction	SHC Lueng Bata	Good	
SHC Daeh Raya	Destroyed	reconstruction	Kuta Raja		
SHC Lamgugob	Slightly damaged		SHC Kampong Pande	Destroyed	reconstruction
SHC Tibang	Destroyed	rehabilitation	SHC Peulanggahan	Destroyed	reconstruction

Source: *1: Damage Assessment Result of Health Center, March 2005
*2: Kerusakan Puskesmas dan Jaringannya, Dampak Gempa dan Tsunami, 26 Dec., 2004 di Provinsi Nangre Aceh Darussalam, Hasil Assesmen (Damage on health center and those networks by earthquake and tsunami in NAD Province, Assessment Results), March 2005, University of Gajah Mada and District/ City Health Offices in NAD Province

However, relocation of those facilities might be difficult especially in Banda Aceh City because the city government has to procure the alternative land and the land market in the city has been rising in post-tsunami period, while land for health center and its network could be provided by community with free of charge in the other districts. It is one of major reasons why the memorandums of understanding (MOUs) have not been signed between the city health office and supporting agencies which had committed to reconstruct the destroyed health/sub-health centers.

To response emergency needs, satellite health posts were established in or near temporary location centers. According to "Master Plan for Rehabilitation and Reconstruction of Aceh Region and Nias", 55 satellite health posts should be set up to provide basic health care services for internal displaced people. Local health personnel are also mobilized in some of the satellite health posts other than external human resources. The exact number and location of those could not be grasped because coordination among supporting agencies such as NGOs and donors and provincial and district health offices is not well functioning.

(3) Secondary and Tertiary Care Services

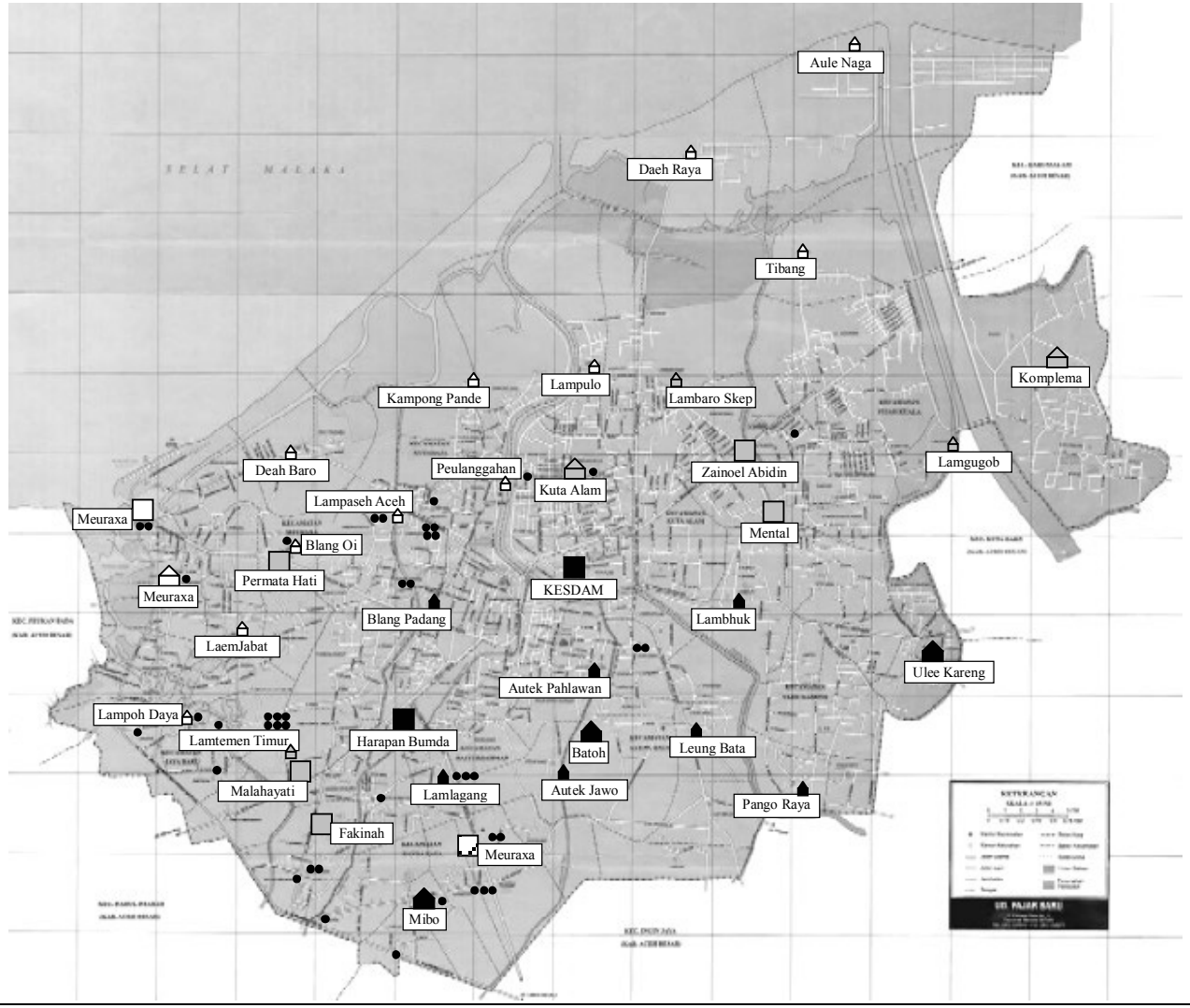
Two out of 7 major hospitals in Banda Aceh City were not functioning because those were destroyed or heavy damaged as shown in the table below. Meuraxa hospital was totally destroyed because it was located in the coastal area. According to Municipal Government, the hospital will be moved to other location where is to be near by new central business district in the spatial plan.

Table 1.14 Post-Tsunami Condition of Hospitals in Banda Aceh City
(as of Jan. - Feb. 2005)

Name of Hospitals	Current Condition[*2]
Dr. Zainoel Abidin Hospital	Nutrition institute and central sterile institute were destroyed. Central operation rooms and emergency rooms were damaged. According to the director, 50% is functioning.
KESDAM Hospital	Functioning
Meuraxa Hospital	Not functioning (totally damaged)
Banda Aceh Mental Hospital	Functioning
Mahalayati Hospital	Functioning; 10 beds were lost.
Teungku Hakinah Hospital	Functioning; 10 beds were lost.
Permata Hati Hospital	Not functioning (heavy damaged)
Harapan Benda Maternal and Child Health Hospital	Functioning.

Source: Aceh Health Facility Mapping, WHO (http://www.acehhealthinfo.net/document.php?id=43; accessed on 5 May 2005) and Provincial Health Office

NGOs and foreign governments established field hospitals in emergency stage, however, some of them have withdrawn because of transition from emergency to rehabilitation stage. Numerous local and international agencies mobilize health personnel to Zinoel Abidin Hospital to supply lost human resources, and to satisfy increased needs because patients seek care to the hospital directory from primary facilities as Meuraxa hospital was totally damaged.



Legend:	
Health Centers	
	: good
	: damaged
	: destroyed
Sub-health center	
	: good
	: damaged
	: destroyed
Hospitals	
	: good
	: damaged
	: destroyed
	: to be moved
	: village birthing home

Source: Damage Assessment Result of Health Center, March 2005; Aceh Health Facility Mapping, WHO (http://www.acehhealthinfo.net/document.php?id=43; accessed on 5 May 2005) and Provincial Health Office

Figure 1.2 Map of Health Facilities with Damage Levels in Banda Aceh City

(4) Others

Medicine and other medical supply used in health facilities in the affected areas have been provided by buffer stocks of Ministry of Health and numerous external agencies such as NGOs and donor agencies. According to the Provincial Health Office, existing stocks might be enough for next 6 months, however some medicines were expired because of delay of distribution. As Drug and Food Control Center in Banda Aceh City have been heavy damaged in its laboratory equipment, medicines which are provided by external agencies are controlled in Medan.

1.2.3 Major Development Partners' Activities

Numerous agencies have involved in providing technical and logistical assistance in health sector in the affected areas soon after the disaster. Although some for emergency relief have already demobilized, many agencies were still working in health sector in Banda Aceh City as shown in the table below. Generally, NGOs contribute in grass route or primary care and multi lateral donors such as WHO and UNICEF support executing agency through capacity building, then bilateral donors tend to focus on medium and long term and large scale assistance.

NAD provincial health office has been making effort to coordinate those activities in cooperation with WHO. They recommend the supporting agencies to exchange memorandum of understandings between provincial or district health office and to submit to the provincial health office. However, it seems to be difficult to grasp all updated information because some might provide assistance directly to the community without noticing to provincial or district health offices.

The related Indonesian authorities are expected to manage such information and to coordinate to avoid over wrapping or duplication and to improve effectiveness and efficiency of rehabilitation and reconstruction activities.

Table 1.15 Current Activities of Major Development Partners in Banda Aceh City

(1/3)

(as of May 2005)

Organization	Activities	Period
International Organizations		
WHO	• Infectious diseases prevention (Immunization, vector control) • Nutrition promotion • MCH (maternal and child health) • School health • Mental health healing program • Support for Drugs and Food Monitoring board (equipment and technical assistance) • Waste management support in hospitals • Diseases surveillance system • Info-com system • Capability building (technical training for medical personnel, strengthening coordinating activities of provincial health office)	long term
UNICEF	• Immunization • Nutrition promotion • MCH • HIV/AIDS prevention training for youths • Psychological healing in child centers	long term
UNFPA	• Reproductive health and adherence health	long term
Asian Development Bank	• Reprogramming Decentralized Health Services Project (health infrastructure and equipment) • Grant aid assistance for provincial health office for 3 years • Earthquake and Tsunami Emergency Support Program	long term
World Bank	• Initiating support in health information system development • Provincial health development project	long term
International Organization for Migration	• Emergency room of Zinoel Abidin Hospital • Health education • Immunization • Mental health • Satellite health post development	Jan-05~
Bilateral Donors		
AusAID	• Logistic support to hospitals (Zinoel Abidin Hospital, Mental Hospital, Fakinah Hospital) • Rehabilitation and provision of equipment for provincial health office, Zinoel Abidin Hospital	long term
GTZ	• Provincial health sector planning • Health information system (data collection and monitoring) • Human resourced management including motivation package doe temporary recruitment • Drug supply (with AusAID) • District health system development • Capability building for health care financing, health system implementation and training • Rehabilitation of Zinoel Abidin Hospital (master plan)	long term
KfW	• Rehabilitation of provincial health office with administrative equipment • Upgrading health facilities for long term • Health management information program (hardware and training) • Rehabilitation of Zinoel Abidin Hospital	long term
Austria Government (Hilsfwerk Austria)	• Reconstruction of Meuraxa Hospital	
Hungarian Government	• Reconstruction of pediatrics ward of Meuraxa Hospital including equipment	

Table 1.15 Current Activities of Major Development Partners in Banda Aceh City

(2/3)

(as of May 2005)

Organization	Activities	Period
USAID	• Reproductive health and family planning • Community-led actions for recovery in Aceh – Rebuilding Aceh shattered social fabric (health sector is included as one of components.)	long term
NGOs		
Aide Medicale International	• Mental health support	
Bulan Sabit Merah Indonesia	• Vector control	Feb-05~
Care International	• Mental health support • Health promotion and nutrition surveillance (Kuta Alam, Syiah Kuala, Ulee Kareng) • Distribution of micronutrient • Support to midwives in camps • Water and sanitation intervention (water-borne diseases conrol) • Health center system recovery (capacity building and development of village birthing homes)	Jan-05~
Catholic reliefe Service (CRS)	• Rehabilitation of Kuta Alam health center • Reconstruction of maternal and child hospital including equipment • Support provincial health office in the hospital operation planning.	
FHI Canadian	• Psychological recovery, medical supply	
German Agro Action	• Rehabilitation of pediatric, obstetric, pulmonary, dental clinic, radiology and pathology department of Zinoel Abidin Hospital (including equipment)	
GOAL	• Support to Nurses Association • Health and hygiene promotion	Jan-05 ~ Aug-05
Helen Keller International	• Micronutrient supply	Jan-05~
Ikatan Dokter Indonesia	• Laboratory equipment, training for medical equipment repairment	
Indonesian Red Cross Society (PMI)	• Primary health care (PHC)	long term
International Medical Cooperation	• Providing mobile clinics and ambulances	
Malteser Germany	• Hospital support for clinical services and teaching in Zinoel Abidin Hospital and x-ray machine procurement • Blood bank for Zinoel Abidin Hospital • Measles immunization	Feb-05~
Malteser International	• Malaria control (bed net)	
Medicins Sans Frontieres (MSF) Belgium	• Mobile clinic • Mental health	2 years
Mercy Malaysia	• Mental health intervention program in RSjiwa • Reconstruction of obgyn and orthopedics sections of Zinoel Abidin Hospital • Reconstruction of nursing and pharmacy school	long term
Merlin	• Reconstruction of Komplema Darussalam and Kuta Alam health centers, and Lantemen and Lamgugop sub-health centers • Vehicles for provincial health office	Jan-05~

Table 1.15 Current Activities of Major Development Partners in Banda Aceh City

(3/3)

(as of May 2005)

Organization	Activities	Period
Northwest Medical Team (NWMT)	• Traumatic counseling • Health services in Meuraxa Hospital (temporary building) for 12 months • Support for rehabilitation of Meuraxa Hospital (maternal and child section) including medical and non-medical equipment and supply and management support • Rehabilitation of Mibo, Komplema and Ulee Kareng health centers • Operating of mobile clinic • Support for nurse training in public health school	Jan-05~
Pharmaciens Sans Fronteres	• Medical supply • Logistic support to provincial and district drug warehouses • Training on pharmacy/ drug management	Feb-05 ~ Aug-05
Plan International	• Reproductive health in PHC (primary health care)	
Professionals International	• Psychological rehabilitation	
Save the Children	• Nutrition (food for children (7-18 years old) and lactation program for pregnant women)	mid-Apr. 2005 ~
Terre De Hommes Italy	• PHC, child protection	medium term
World Vision	• Mental health (counseling and peer education) • Reconstruction of Lambaro Skep sub-health center, rehabilitation of Lueng Bata health center • Ambulance (7), bed (100) and medical equipment for Zinoel Abidin Hospital • Ambulance (1), bed (100) and medical equipment, drugs for Premata Hari Hosputal • Drugs, support for staff salary (2months) for Fakinah Hospital • Medicine for Mibo, Baiturrahman and Ulee Kareng health centers	
World Care	• Reconstruction of Lambaro Skep sub-health center, rehabilitation of Lueng Bata health center	
Yayasan Harapan Permata Hati Kita	• Mental health (counseling and peer education)	

Note: Emergency relief activities are not included.

Source: List of Organization on Health Sector, WHO, April 2005
hearing from Provincial Health Office and WHO

CHAPTER 2 RELATED PLANS

2.1 MASTER PLAN FOR REHABILITATION AND RECONSTRUCTION OF ACEH REGION AND NIAS

Objectives, targets and principles identified in "Master Plan for Rehabilitation and Reconstruction of Aceh Region and Nias" by the Government of Indonesia for health sector are summarized in this section.

The plan is focused on providing emergency health services to the affected population, recover regular health services and strengthen the services to prepare against extremely cases in the future.

Objectives

- Recover of life and social welfare in Aceh, Nias and North Sumatra from Tsunami disaster through health services supported by science and technology.
- Implementing emergency services for tsunami victims
- Preventing outbreak of infectious diseases and malnutrition
- Satisfying needs for health services for people including refugees
- Rehabilitating and functionalizing health facilities and infrastructures
- Rehabilitating and functionalizing drug and food security facilities and infrastructures

Targets

- All people and victims of in the affected areas access appropriate health services accordance with their needs.
- All health facilities and infrastructures in the affected areas are re-functionalized.
- All physical and non-physical environmental aspects are free from outbreak of diseases.

Principles

- Health is basic human rights. All people and victims of the diseases have right to access health services in accordance with their needs especially for vulnerable groups.
- Rehabilitation and development of health service facilities should be implemented according to standards of function and location in residential areas.
- Prevention and control of diseases in all areas especially in the affected areas to prevent outbreak of infectious diseases.
- Health services should be provided according to existing situation and condition with philosophical and ethical standards.

Implementation steps and 11 programs are summarized in following tables.

Table 2.1 Implementation Steps
(1/2)

Stage	Objectives/ Activities		Targets
Emergency Stage	➢ Emergency rescue 1) Improvement of emergency services coordination 2) Rapid health assessment 3) Mobilization of the resources 4) Provision of emergency health services ➢ Prevention of outbreak of infectious diseases 1) Rapid health assessment 2) Prevention and control of infectious diseases 3) Strengthening epidemiology surveillance system ➢ Rehabilitation of Drug and Food Security Center (BBPOM) in Banda Aceh 1) Mobilization of resources for Drug and Food Security System in NAD 2) Preparation of minimum laboratory equipment 3) Monitoring of commodities for assistance in security post (Posko) and distribution facilities 4) Establishment of referral system of drug and food sample to BBPOM in Medan 5) Inventory of damage and losses in BBPOM in Banda Aceh 6) Rapid need assessment for basic facilities of BBPOM in Banda Aceh	<u>Completed and ongoing efforts for emergency stage</u> ➢ Upgrading of coordination among governmental agencies and domestic and international partners ➢ Rapid Health Assessment ➢ Mobilization of Resources ➢ Providing Emergency Health Services ➢ Prevention of infectious diseases outbreak	➢ All victims of the affected areas are treated ➢ Extreme out break of infectious diseases and malnutrition are minimized ➢ All trauma in the affected areas are treated
Rehabilitation Stage	➢ Maintaining health services providing system 1) Rapid health assessment 2) Establishment of temporally basic health service facilities and referral system including satellite health posts and field hospitals 3) Provision of routine health services: treatment and care, nutrition improvement, maternal and child health, reproductive health, mental health, improvement of sanitation and environmental health, prevention of infectious diseases and health promotion ➢ Revitalization of Drug and Food Security Center in Banda Aceh 1) Revitalization of drug and food security system (SISPOM) 2) Rehabilitation of physical and non-physical facilities 3) Revival of local drug and food industries 4) Cooperation with technical sectors related to family/micro enterprises in drug and food industry 5) Recruitment of officials		➢ Health system, emergency health service facilities in the affected areas function well ➢ People in the affected areas who needs health services are treated well ➢ Health situation including mental health and mortality in the affected areas are improved

Table 2.1Implementation Steps
(2/2)

Stage	Objectives/ Activities	Targets
Reconstruction Stage	➢ Revitalization of health offices, hospitals and health centers 1) Needs assessment 2) Rehabilitation and construction of buildings 3) Provision of facilities and infrastructures 4) Ensure health personnel 5) Institutional strengthening ➢ Revitalization of Drug and Food Control Center (BBPOM) 1) Rehabilitation and construction of office building and laboratory for Drug and Food Control Center in Banda Aceh 2) Provision of facilities and infrastructures 3) Mobilization and ensure personnel 4) Strengthening drug and food security system including entry point areas 5) Construction of drug and food security post in Sabang 6) Construction of drug and food security in Nias	➢ Health facilities and infrastructures in the affected areas are rehabilitated well ➢ Health systems in the affected areas are recovered to normal standards.

Source: Rencana Induc Rehabilitasi dan Reconstrucsi Wilayah Aceh dan Nias, Sumatra Utara, Buku VI – Rencana Bidang Pendidikan dan Kesehatan (Master Plan for Rehabilitation and Reconstruction of Aceh Region and Nias, Book VI: Education and Health Sector), Republic of Indonesia, March 2005

Table 2.2 Summary of Programs for Rehabilitation and Reconstruction of Health Sector
(1/3)

	Program name	Project name	Objectives	Target groups	Location	Executing agency and responsible agency	Estimated cost mil. Rp. (mil. US$ @9,300)
1	Health promotion and community empowerment	Improvement of health promotion and community empowerment	• Health promotion and community empowerment activities are implemented in the affected areas	• the population and victims in NAD Province	NAD Province	• Ministry of Health (secretariat) • NAD Provincial Health Office	Rp2,250 (US$0.24)
2	Healthy environment	Improvement of environmental health	• Early warning system is strengthened • Improvement of sanitary condition and safe water supply are implemented	• the population and victims in NAD Province • Environmental facilities and infrastructures	NAD Province	• Ministry of Health (General Directorate for infectious diseases prevention and control and environmental health: Ditjen P2MPL) • NAD Provincial Health Office	Rp2,000 (US$0.22)
3	Community health	Basic health services	• Basic health services are provided to the population including victims; a) medical treatment b) nutrition improvement c) maternal and child health d) infectious diseases prevention and control e) reproductive health f) mental health g) health promotion • 55 temporary health service facilities are established (Satellite Health Post) • Health centers are revitalized	• 120,000 of beneficiaries of Satellite Health Posts • health facilities and the personnel	2 cities and 13 districts in North Aceh and Nias	• Ministry of Health (General Directorate for Community Health) • NAD Provincial Health Office • City and District Health Offices	Rp147,922 (US$15.91)
4	Health program implementation	Referral services	• Temporally referral system is established (field hospitals) • Referral services are provided to the population and victims • Hospitals are revitalized especially; a) Rehabilitation of Zainal Abidin and Mental hospitals b) Construction of Meuraxsa Hospital	• 30,000-40,000 in the affected areas • Hospitals	Banda Aceh and Aceh Jaya	• Ministry of Health (General Directorate for Medical Services) • NAD Provincial Health Office • Hospitals • City and District Health Offices	Rp787,933 (US$84.72)

Table 2.2 Summary of Programs for Rehabilitation and Reconstruction of Health Sector
(2/3)

	Program name	Project name	Objectives	Target groups	Location	Executing agency and responsible agency	Estimated cost mil. Rp. (mil. US$ @9,300)
5	Diseases prevention and control	Infectious diseases prevention and control	• Infectious diseases prevention and control is carried out in the affected areas, including immunization, vector control, disinfection, water purification in 12 cities/districts • Epidemiology survey is carried out in 21 cities/districts • Improvement of sanitary environment and safe water supply are carried out in 12 cities/districts • 2 port health offices are rehabilitated and reconstructed (Sabang and Banda Aceh) • Medicine, medical supply and equipment are provided	• the population and victims in NAD Province • related facilities"	13 affected cities/ districts, 8 cities/ districts in NAD and Nias	• Ministry of Health (General Directorate for infectious diseases prevention and control and environmental health) • NAD Provincial Health Office • City/District Health Offices • Port Health Offices	Rp144,900 (US$15.58)
6	Community nutrition improvement	Improvement of community nutrition status	• Nutrition improvement activities are carried out in the affected 13 cities/district • Pregnant and lactating women and children are protected from malnutrition	• affected population	13 affected cities/ districts, 8 cities/ districts in NAD and Nias	• Ministry of Health (General Directorate for Community Health) • NAD Provincial Health Office • City/District Health Offices	Rp38,710 (US$4.16)
7	Medicine and medical supply	Preparation of medicine and medical supply	• 3 units of warehouse are constructed in Aceh Jaya, Bener Meriah and Province • Distribution equipment (20 unites of motorbike and 3 units of vehicles) • Providing buffer stocks of medicine and medical supply for 3.9million the population	• 120,000the population in the affected areas	Banda Aceh and Aceh Jaya for warehouse and all areas	• Ministry of Health (General Directorate for Pharmacy and equipment) • NAD Provincial Health Office • City/District Health Offices	Rp112,879 (US$12.14)
8	Health resources	Dispatching health personnel and revitalization of education facilities	• Health personnel (Dr, specialist doctors, nurses, midwives, nutritionists, sanitation workers, epidemiologists, medical technicians) is dispatched • Education for health personnel is implemented • Revitalization of health education facilities are carried out	• health personnel • health education facilities"	6 cities/ districts	• Ministry of Health (secretariat for personnel affairs, human resources bureau) • NAD Provincial Health Office • City/District Health Offices	Rp659,898 (US$70.96)

Table 2.2 Summary of Programs for Rehabilitation and Reconstruction of Health Sector
(3/3)

	Program name	Project name	Objectives	Target groups	Location	Executing agency and responsible agency	Estimated cost mil. Rp. (mil. US$ @9,300)
9	Drug and food security	Revitalization of drug and food security function	• POM center in Banda Aceh is rehabilitated • POM posts in Sabang and Nias are constructed • Drug and food security system are re-established effectively to contribute security, health and safety of the population • Warning system on quality, safety and effects of modern and traditional medicines, cosmetics, health and household supply and food products produred in NAD • Mental medicines and drugs utilized in NAD are controlled	• affected population • related facilities • family and small enterprises	Banda Aceh, Sabang and Nias	• POM in central and Banda Aceh	Rp63,600 (US$6.84)
10	Health development policy and management	Health office construction	• NAD provincial health office are rehabilitated and constructed • Banda Aceh City health office are rehabilitated • Aceh Jaya district health office is constructed	• Provincial, city and district health offices	Banda Aceh and Aceh Jaya	• Ministry of Health (secretariat) • NAD Provincial Health Office • City and District Health Offices	Rp16,220 (US$1.74)
11	Health research and development	Health research and development	• Technical Implementation Unit (800m2) is constructed • Research and development equipment is provided	• Research and development facilities	Banda Aceh	• Ministry of Health (research and development) • NAD Provincial Health Office	Rp4,300 (US$0.46)
						Total	Rp1,828,440 (US$196.61)

Source: Rencana Induc Rehabilitasi dan Reconstrucsi Wilayah Aceh dan Nias, Sumatra Utara, Buku VI – Rencana Bidang Pendidikan dan Kesehatan (Master Plan for Rehabilitation and Reconstruction of Aceh Region and Nias, Book VI: Education and Health Sector), Republic of Indonesia, March 2005

In emergency stage (up to June 2005), those programs are focused on emergency relief activities for the affected areas and people. Rehabilitation or compensation of damage or loss to resume regular health services are to be implemented in rehabilitation stage (from June 2005 to December 2006) and revitalization and strengthen of the services including establishment of emergency health system to prepare against extremely cases are to be implemented in reconstruction stage (from January 2007 to December 2009).

Implementations of all the programs expect research and development are to be implemented continuously from emergency stage to reconstruction stage. Research and development program is to be started from rehabilitation stage.

2.2 REVISED PLAN OF REGIONAL SPACE LAYOUT (RTRW: RENCANA TATA RUANG WILAYAH), BANDA ACEH CITY, YEAR 2001-2010

According to the health care facility development policy mentioned in the RTRW (called as the City Master Plan), number of health care facilities including health canters, sub health centers, public hospitals and clinics should be adopted to population coverage.

Table 2.3 Number of Unit and Facility Space in Banda Aceh City for the years of 2001 through 2010

Facility type	Supporting Inhabitant Standard	Space Requirement Standard	Year					
			2001		2005		2010	
			225,865 people		263,624 people		307,695 people	
			Unit	Space (m^2)	Unit	Space (m^2)	Unit	Space (m^2)
-Public hospital	Province	300,000	1	300,000	1	300,000	1	300,000
-SECTION hospital	SECTION	100,000	4	400,000	4	400,000	4	400,000
-Health center	30,000	10,000	8	75,288	9	87,875	10	102,565
-Polyclinic	10,000	1,000	23	22,587	26	26,362	31	30,770
-Sub health center	6,000	600	38	22,587	44	26,362	51	30,770
-Public pharmacy	3,000	300	75	22,587	88	26,362	103	30,770
-Private pharmacy	10,000	350	23	7,905	26	9,227	31	10,769
-Private clinic	5,000	100	45	4,517	53	5,272	62	6,154
-Private birthing home	5,000	100	45	4,517	53	5,272	62	6,154
Total			261	895,988	304	886,734	354	917,951

Source: Revised Master Plan of Regional Space Layout (RTRW), Banda Aceh City, Year 2001-2010, Banda Aceh City BAPPEDA, 2001

As shown in the above table, a health center should cover 30,000 people and a sub health center should cover about 6,000 people. Four health centers and 31 sub health centers were proposed to be established up to 2010 in accordance with population projection. However, considering function of sub health centers, that is to serve to the population not covered by health centers, the number could be planned in coordination with the coverage of the health center. Regarding hospital development, 3 more “section hospitals” were to be established up to 2010.

2.3 HEALTHY INDONESIA 2010

Vision, mission and strategy of national health development are defined in "Healthy Indonesia 2010" as summarized below.

Vision: People live in healthy environment with healthy and preferable hygiene practice, and satisfying and utilizing with health services, as well as good health condition as a result.

Mission: The government is to implement national development considering health aspects, to encourage people's initiative for healthy life, and to provide health services with improving quality, fairness and equality, as well as to provide health services to improve individual, family and environmental health.

Strategy: National development considering health aspects, professionalism, social safety net for health sector and decentralization should be ensured.

The plan was established in 2001 and revised in 2003 according to the progress, as well as concrete targets were set with 50 indicators summarized as follows.

Table 2.4 Targets in Healthy Indonesia 2010

Category	Indicators
Health Condition	
Mortality	1 Infant Mortality Rate (IMR) 2 Under-5 Mortality Rate (U5MR) 3 Maternal Mortality Rate (MMR) 4 Life expectancy rate
Morbidity	5 Malaria morbidity among general population 6 Recovery rate among identified tuberculosis patients 7 HIV prevalence among high-risk population 8 Acute Flaccid Paralysis (AFP) morbidity among under 15 children 9 Dengue fever morbidity among general population
Nutrition	10 Malnutrition among under 5 children (%) 11 Sub-districts without malnutrition (%)
Efforts of People	
Environment	12 Healthy household (%) 13 Healthy public facility (%)
Life style	14 Household with healthy life style (%) 15 Active and independent Posyandu (%)
Access to and quality of health services	16 Population benefited by health center (%) 17 Population benefited by hospital (%) 18 Health facility with laboratory (%) 19 Hospital with 4 basic medical subjects (%) 20 Generic drugs among buffer drugs (%)
Process and Inputs	
Health services	21 Birth attended trained health personnel (%) 22 Village achieved "Universal Child Immunization" (%) 23 Village treated within 24 hours after extremely situation (%) 24 Pregnant women who received Fe tablets (%) 25 Infants with exclusive breastfeeding (%) 26 School children who received nutrition and growth monitoring (%) 27 Employees who received health services in their working place (%) 28 Poor family who received health services (%)

Category	Indicators
Health resources	29 Doctor ratio (per 100,000 population) 30 Specialist doctor ratio (per 100,000 population) 31 Family doctor ratio (per 1,000 households) 32 Dentist ratio (per 100,000 population) 33 Pharmacist ratio (per 100,000 population) 34 Midwife ratio (per 100,000 population) 35 Nurse ratio (per 100,000 population) 36 Nutritionist ratio (per 100,000 population) 37 Hygiene specialist ratio (per 100,000 population) 38 Community health specialist ratio (per 100,000 population) 39 People involced in health insurance (%) 40 Health budget in local account (%) 41 Budget allocation for health per capita per year
Health management	42 Local government with health system documents 43 Local government with "Contingency plan" for extremely case 44 Local Government preparing health profile 45 Provincial government implementing health development plan 46 Provincial government having "Provincial Health Account"
Contribution from other sector	47 Household with access to clean water (%) 48 Reproductive age people accepting family planning (%) 49 Incidence of traffic accident (per 100,000 population) 50 Literacy rate (%)

CHAPTER 3 URGENT REHABILITATION AND RECONSTRUCTION PLAN FOR HEALTH SECTOR IN BANDA ACEH CITY

3.1 MISSION, STRATEGY AND GOALS

Some health service providers located in Banda Aceh City are expected to provide their services not only for population in the City but also for suburbs areas or whole NAD Province. Those are;

- Zinoel Abidin Hospital: Top referral general hospital in NAD Province
- Mental Hospital: The only mental hospital in NAD Province
- Drug and Food Control Center: Monitoring and controlling drugs, medicines, cosmetics and other chemical products, and foods in markets in NAD Province
- Syah Kuala University: Turning out medical and health human resources
- Public Health School: Turning out medical and health human resources

Therefore, rehabilitation and reconstruction of health sector in Banda Aceh City might affect on other districts in NAD Province, and planning and implementation of the programs and projects should be closely coordinated among city and provincial governments, especially for tertiary care, mental care, human resources development and drug and food control.

Mission, strategy and goals could be proposed as follows.

Table 3.1 Mission and Strategy of Urgent Rehabilitation and Reconstruction Plan for Health Sector in Banda Aceh City

Mission	Strategy
1. Revitalization of health service providing system.	1-1. Rehabilitation and reconstruction of health facilities and equipment at all levels.
2. Providing sustainable health services to maintain and improve physical and mental health condition of people properly and equally.	2-1 Capacity building of implementing organizations and service providers.
	2-2 Development of human resources including doctors, co-medical staff, government officials and health volunteers to provide health services for people.
	2-3 Strengthen of referral system among community, health centers and those networks and hospitals.
	2-4 Consideration for vulnerable groups such as children, aged people and women.
3. Encouraging people to take initiative in health development.	3-1 Mobilization of community to sustain primary health care and health promotion activities

Source: JICA Study Team

Table 3.2 Goals of Urgent Rehabilitation and Reconstruction Plan for Health Sector in Banda Aceh City

2015	**Overall goal:** Health indicators are improved as a result of sustainable health development.
~2009	Reconstruction Stage: Revitalizing and sustaining of health services to maintain and improve health service indicators.
	1-1-1. Permanent health human resources receive necessary refresher's training. 2-1-1. Maintenance system of health facilities and equipment is established. 2-1-2. Policy planning and management capacity is revitalized. 2-2-1. Health education institutions turn out health personnel regularly. 2-2-2. Health personnel and health volunteers receive regular training. 2-3-1. Patients refereed to appropriate health facilities properly. 2-4-1. Vulnerable people (the poor, women and children) can access to appropriate health services. 3-1-1. Primary health care system in the community is revitalized.
~2006	Rehabilitation Stage: Recovering of damages and losses of health service providers
	1-1-1. Damaged health facilities including equipment are rehabilitated, reconstructed or repaired. 1-1-2. Damaged drug and medical supply system are rehabilitated. 1-1-3. Lost human resources are recruited by temporally human resources. 2-1-1. Health information system is established. 3-1-1. Community awareness rising system is established.

Source: JICA Study Team

At earlier stage in rehabilitation period, assessments on existing situation at all stakeholders including community, health service providers and health policy planners and implementers are required. Based on the results, details and priority of programs might be identified.

In reconstruction stage, situation analyses are also required to evaluate the achievement of rehabilitation programs and to review the reconstruction plan. Sustainability of the recovered health services providing system should be focused in the stage, therefore, enhancement of routine and regular services through monitoring and training might be prioritized.

Revitalizing of health service providing system could achieve improvement of accessibility to health services presented by health service indicators such as immunization coverage, health facility utilization rate, coverage of health service providers, and coverage ratio of health services including antenatal care, post natal care, growth monitoring, health promotion activities and infectious diseases prevention and care[4].

Improvement and maintaining of accessibility to health services might achieve preferable health condition of the people, however, it generally takes time. Health condition could be presented by health outcome indicators such as mortality and morbidity. Although the indicators to be monitored

[4] Infectious diseases prevention and care in this context include direct observation and treatment - short term (DOTS) for tuberculosis, volunteer testing and counseling (VCT) for HIV/AIDS, malaria control and so on.

vary among programs, the followings might be proposed as those are included in both Millennium Development Goals (MDGs) for 2015 and also targeted in Healthy Indonesia 2010.

- Infant Mortality Rate
- Maternal Mortality Rate
- Under-5 Mortality Rate
- Morbidity and mortality of major infectious diseases (tuberculosis, HIV/AIDS, malaria, etc.)

For sustainable health development after rehabilitation, reconstruction and revitalization of health system, continuous efforts on health system management including human resource development and ensuring financial sources such as budget allocation are required as well as regular monitoring and evaluation on health policy implementation.

3.2 URGENT REHABILITATION AND RECONSTRUCTION PLAN

The urgent rehabilitation and reconstruction plan for health sector in Banda Aceh City are formulated based on the following criteria.

- Resuming of regular health service providing system by restoring damaged facilities and lost human resources.
- Coherence with related plan of the Government of Indonesia, including "Master Plan for Rehabilitation and Reconstruction Aceh Region and Nias", health sector action plan of Banda Aceh City, and other health sectoral plan and strategy such as "Healthy Indonesia 2010".

Based on the above criteria, following projects are proposed for Urgent Rehabilitation and Reconstruction Plan for Health Sector in Banda Aceh City.

Table 3.3 Projects for Urgent Rehabilitation and Reconstruction Plan for Health Sector in Banda Aceh City

Program	
Project	Major Activities
Environmental health	
Improvement of environmental health	- Improvement of environmental condition in tsunami affected areas - Sensitization on environmental health and hygiene practice for general population - Monitoring and control of quality of drinking water
Health service	
Rehabilitation/ reconstruction of damaged health centers and those networks	- Rehabilitation of 6 damaged health centers/ sub health centers. - Reconstruction of 12 destroyed health centers and sub health centers.
Reconstruction of destroyed and damaged public hospitals	- Relocation and reconstruction of Meuraxa Hospital - Rehabilitation of Zinoel Abidin Hospital
Revitalization of basic health services including primary care, public health programs and health promotion, and referral services	- Training on technical and management skills improvement for health personnel and community - Awareness rising on community health for general population

Table 3.3 Projects for Urgent Rehabilitation and Reconstruction Plan for Health Sector in Banda Aceh City

Program	
Project	Major Activities
Maternal and child health system improvement	- Training on maternal and child health for health workers and community - Establishment of community referral system
Community nutrition improvement	- Provision of supplemental nutrition (vitamin A, iron tablets, etc.) - Establishment of nutrition surveillance system - Training on nutrition surveillance system
Mental Health Care Improvement	- Training on physiological care for health personnel at all levels - Establishment of down referral system for ex-patients
Trauma treatment for tsunami victims	- Establishment of trauma rehabilitation center and rehabilitation programs - Training on trauma treatment and rehabilitation for health personnel and community
Diseases prevention and control	
Revitalization of infectious diseases prevention and control system	- Post-tsunami epidemiology survey - Establishment of health information system and regular epidemiology surveillance system - Training on health information system and epidemiology surveillance
Communicable diseases control enhancement	- Capacity building on quality control of laboratory works - Establishment of laboratory referral system - Establishment of communicable diseases alert system
Drug and medical supply	
Rehabilitation of drug and medical supply system	- Rehabilitation of drug and medical distribution facilities and equipment including storage and transportation - Revitalization of drug and medical management system
Health resources	
Health human resources development	- Revitalization of health education facilities - Educating and encouraging local human resources
Health development policy and management	
Revitalization of Banda Aceh City Health Office	- Rehabilitation of Banda Aceh City Health Office - Capacity building for health policy development and management - Establishment of program coordination body - Establishment of health database
Drug and food control	
Revitalization of drug and food security system	- Rehabilitation of Drug and Food Control Center - Capacity building for drug and food control system
Emergency Health and Medical Services	
Emergency health and medical service system development	- Establishment and development of emergency service providing structure among health service providers - Training on emergency health and medical services

Source: JICA Study Team

3.3 PRELIMINARY PROJECT COST AND TENTATIVE IMPLEMENTATION SCGEDULE

Preliminary project cost for urgent rehabilitation and reconstruction of health sector in Banda Aceh City proposed in this study is estimated based on the following conditions and assumptions, however, these are subject to change due to finalization of the Indonesian authorities.

Condition of preliminary cost estimation

(1) Physical contingency and price escalation are assumed to be 10 % each of the direct construction cost.
(2) Engineering service is assumed to be 10% of the direct construction cost for detailed study & design and construction supervision.
(3) If project is purely program type and/or procurement, only price contingency is considered.
(4) VAT is included in the cost, however, import duties are not included in the cost.
(5) Land acquisition and compensation costs are not included in the Project cost due to difficulty of estimation at this time

Total project cost is shown below. Each project cost which estimated based on the city action plan and other related information is presented in the foregoing tentative implementation schedule.

Table 3.4 Preliminary Cost for Urgent Rehabilitation and Reconstruction Plans of Health Sector in Banda Aceh City

(in Rp. billion)

	Programs	Construction works
Direct cost	179.7	230.8
Physical contingency	n.a.	23.1
Engineering Services	n.a.	23.1
Price escalation	18	23.1
Sub-total	197.7	300.1
Total		**497.8**

Source: JICA Study Team

Table 3.5 Tentative Implementation Schedule for Urgent Rehabilitation and Reconstruction of Health Sector in Banda Aceh City

Program / Project	Cost (Billion Rp.)							Executing agency
	Rehab.		Recon.			Up to	Total	
	2005	2006	2007	2008	2009	2015		
Environmental health								
Improvement of environmental health	5.3	10.5	10.5	10.5	10.5	11.1	58.4	CHO*1
Health service								
Rehabilitation/ reconstruction of damaged/ destroyed health centers and those networks	29.0	58.8	0.0	0.0	0.0	0.0	87.8	CHO
Rehabilitation/ reconstruction of damaged/ destroyed public hospitals								
Meuraxa Hospital	59.5	13.1	0.0	0.0	0.0	0.0	72.6	CHO
Zinoel Abidin Hospital	26.0	39.0	0.0	0.0	0.0	0.0	65.0	PHO*2
Revitalization of basic health services including primary care, public health programs and health promotion, and	0.6	1.2	1.2	1.2	1.2	6.4	11.8	CHO
Maternal and child health system improvement	0.2	0.9	0.7	0.2	0.2	0.6	2.8	PHO/ CHO
Community nutrition improvement	0.2	0.3	0.3	0.3	0.3	2.0	3.4	CHO
Mental Health Care Improvement	0.2	0.6	1.1	0.2	0.2	0.7	3.0	PHO/ CHO
Trauma treatment for tsunami victims	2.0	4.3	0.3	0.3	0.3	1.4	8.6	CHO
Diseases prevention and control								
Revitalization of infectious diseases prevention and control system	2.2	4.4	0.5	0.5	0.3	2.1	10.0	CHO
Communicable diseases control enhancement	0.6	2.4	3.5	0.2	0.2	0.7	7.6	PHO/ CHO
Drug and medical supply								
Rehabilitation of drug and medical supply system	0.4	0.6	0.0	0.0	0.0	0.0	1.0	CHO
Health resources								
Health human resources development	6.6	9.5	10.4	8.5	8.5	51.0	94.5	PHO
Health development policy and management								
Revitalization of Banda Aceh City Health Office	2.8	4.4	1.4	1.4	1.4	8.5	19.9	CHO
Drug and food control								
Revitalization of drug and food security system	8.1	16.4	0.5	0.5	0.5	0.0	26.0	BPOM*3 Banda Aceh
Emergency Health and Medical Services								
Emergency health and medical service system development	6.1	8.4	6.1	0.5	0.5	3.8	25.4	PHO/ CHO
Total Cost		324.6			84.9	88.3	497.8	
	149.8	174.8	36.5	24.3	24.1	88.3		

Source: JICA Study Team

Note: Costs for land acquisition and compensation are not included.

*1: CHO=Banda Aceh City Health Office

*2: PHO=NAD Provincial Health Office

*3: BPOM=Drug and Food Control Center

3.4 PRIORITY PROJECTS

Following projects are identified as higher priority projects for urgent rehabilitation and reconstruction of health sector in Banda Aceh City and the affected areas.

(1) Rehabilitation/ Reconstruction of Damaged/ Destroyed Health Centers and Sub Health Centers

As described in the prior section, health centers and sub health centers in the coastal areas are destroyed or heavy damaged. To recover basic health services including primary medical care and

community health services, restore of damaged facilities should be implemented at earlier stage. Rehabilitation and reconstruction works have been planned and some of them are being undertaken supported by NGOs.

Based on the population distribution projection and distance among related health facilities in district referral system, such as hospitals, health centers and sub health centers, shown by ARRIS, numbers of health center and sub health center in 2009 could be proposed as follows.

Table 3.6 Number of Primary Care Service Facilities based on Projected Population by ARRIS

	Projected population in 2009	Health center		Sub health center	
		Functioning*1 (pre-tsunami)	2009	Functioning*1 (pre-tsunami)	2009
Inland Areas					
Ulee Kareng	37,658	1 (1)	1	2 (2)	2
Banda Raya	34,784	1 (1)	1	1 (1)	1
Lueng Bata	36,144	1 (1)	1	1 (1)	1
Central Areas					
Syiah Kuala	38,559	0 (1)	1	1 (4)	2
Baiurrahman	37,480	0 (0)	1	2 (3)	2
Kuta Alam	45,484	0 (1)	1	0 (2)	3
Coastal Areas					
Jaya Baru	11,417	0 (0)	0	0 (2)	2
Kuta Raja	6,791	0 (0)	0	0 (2)	1
Meuraxa	5,683	0 (1)	0	0 (4)	1
Total	254,000	3 (6)	6	7 (21)	15

Source: *1: Facilities with good condition and slightly damaged in damage Assessment Result of Health Center, March 2005 are included as "functioning".

Note: Capacity of a health center and a sub health center is estimated based on the regional plan of Banda Aceh City, i.e., 30,000 people for a health center and 6,000 people for a sub health center. Sub health center is considered to cover the population which is not included in the coverage of the health center.

In coastal areas, Jaya Baru, Kuta Raja and Meuraxa, which were seriously damaged, 4 more sub health centers are to be established. As these areas are near to new city center areas, referring to hospitals might not be problem. In central areas, Syiah Kuala, Baiturrahman and Kuta Alam, 3 more health centers and 4 more sub health centers are to be established. In inland areas, Ulee Kareng, Banda Raya and Leung Bata, as damage by tsunami was not very serious, the existing health centers and sub health centers could cover the population in 2009.

Proposed layout plan of health facilities including public primary care facilities and major hospitals are presented in the following figure.

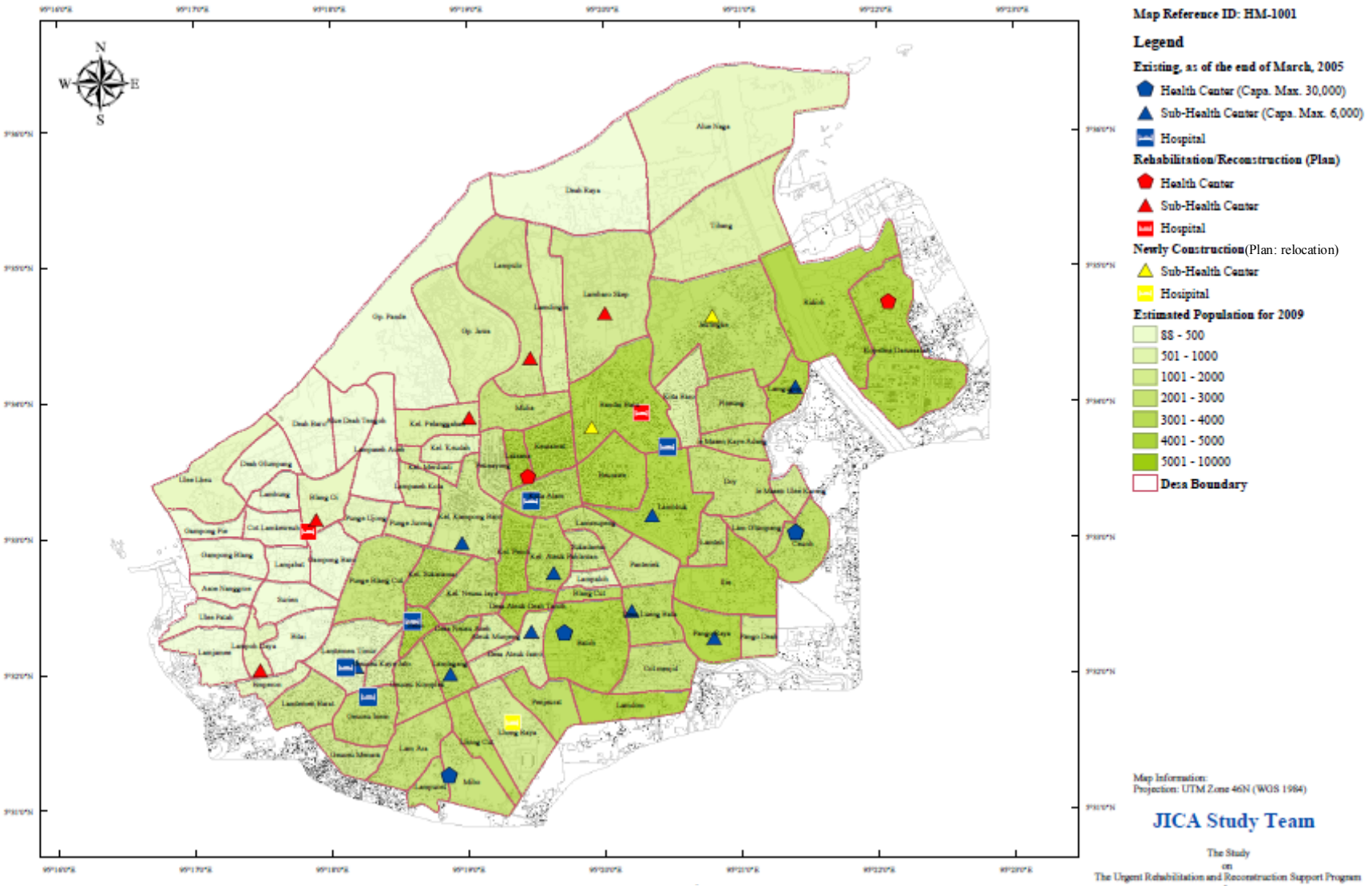


Figure 3.1 Proposed Layout Plan of Health Facilities

(2) Rehabilitation/ Reconstruction of Damaged/ Destroyed Public Hospitals

Meuraxa Hospital located at Ulee Lhee provided secondary care before the disaster. Although it has been providing the services in temporally place, the capacity is not enough. Therefore, reconstruction is required urgently. And actually, the reconstruction plan is being formulated. It should be relocated to inland areas to cover increasing population in new central business district as shown in Figure 5.4.3.

Zinoel Abidin Hospital should also be urgently rehabilitated to provide tertiary care as a top referral hospital in NAD Province. Rehabilitation works and revitalization activities such as training of medical personnel are been implementing by NGOs and donors.

(3) Rehabilitation of Drug and Medical Supply System

Appropriate drug and medical supply and management for health facilities at all levels including regular facilities (health centers and hospitals) as well as temporally facilities (satellite health posts) are essential to provide sufficient health services and medical care. Drug and medical supply and management system is been refining in provincial wide supported by donors.

(4) Maternal and Child Health System Improvement Project

Reducing maternal mortality rate (MMR) is one of the highest priorities in health sector in Indonesia. Although MMR in Banda Aceh City was estimated lower than national average, 114 per 100,000 live births (2003) was still high and it might be getting worse because of damage and losses in health service providers. Awareness of pregnant women and their families is one of key factors to avoid 2 delays from 4 delays[5], i.e., delays in recognizing a developing complication and delays in detecting to act.

Community empowerment and sensitization approach could be efficient and it could be coordinated with the prior program done by UNICEF and WHO which focus on socialization among health service providers. Detailed proposed activities are summarized in Appendix 10.

(5) Mental Health Care System Improvement Project

Because of social, economical and practical reasons (stigma, jobless, difficulty in taking medicine regularly, etc.), patients in the mental health hospital could not return to their community and it causes high bed occupancy rate. After the disaster, patients with mental disorders caused by trauma of tsunami or earthquake have been increasing. However, human resources for mental health care are quite limited and information on treatment of those is also inadequate.

To improve quality of mental health care, developing human resources and supporting rehabilitation of discharged patients and maintaining proper bed occupancy rate in the mental hospital in

[5] Other 2delays are delays in arranging transport and delays in reaching services.

coordination with the prior programs coordinated by WHO might be recommended. Detailed proposed activities are summarized in Appendix 10.

(6) Communicable Diseases Control Enhancement Project

In Banda Aceh City and its suburbs, communicable diseases are still major causes of morbidity. After the disaster, because laboratory equipment in health service providers in health centers and the city hospital were damaged, laboratory examinations on communicable diseases such as tuberculosis and malaria have been concentrated to provincial hospital. Therefore, quality and accuracy might not be well controlled.

To control outbreak of communicable diseases, rehabilitation of damaged laboratories are to be implemented at earlier stage. Establishment of accuracy control system and provincial wide referral network are proposed to improve communicable diseases control system. Detailed proposed activities are summarized in Appendix 10.

(7) Capacity building for drug and food control

Controlling drugs and foods distributed in markets is closely related to daily life of general population and sometime diseases control caused by contaminated food or drugs. It also might be important to control counterfeit, substandard and illegal drugs as geographical situation of Banda Aceh. Although it includes diverse functions, many skilled and experienced human resources were lost because of the disaster. As the function is temporally covered by the Food and Drug Control Center in Medan, distribution of drugs and medical supply provided by aid agencies might be delay.

Rehabilitation of damaged equipment and recruitment of staff are to be implemented in rehabilitation stage, followed by capacity building of the management and technical staff to enhance the food and drug control function. Detailed proposed activities are summarized in Appendix 10.