No.

THE STUDY ON IMPLEMENTATION OF THE BMA SUBCENTERS PROGRAM IN THE KINGDOM OF THAILAND (CASE OF LAT KRABANG) Final Report Summary

August 2006

Japan International Cooperation Agency (JICA) Nippon Koei Co., Ltd.

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PREFACE

In response to a request from the Royal Thai Government, the Government of Japan decided to

conduct a "The Study on Implementation of the BMA subcenters Program in the Kingdom of

Thailand (Case of Lat Krabang)" and entrusted the study to the Japan International Cooperation

Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Koji Yamada of Nippon Koei Co., Ltd.

to Thailand from September 2004 to August 2006.

The team held discussions with the officials concerned of the Thailand and conducted field

surveys at the study area. Upon returning to Japan, the team conducted further studies and

prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of

friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government

of Thailand for their close cooperation extended to the study.

August 2006

Kazuhisa Matsuoka

Vice President

Japan International Cooperation Agency

Mr.Kazuhisa Matsuoka

Vice President

Japan International Cooperation Agency

Tokyo, Japan

Subject: Letter of Transmittal

Dear Madam,

We are pleased to submit herewith the Final Report of "The Study on Implementation of the BMA subcenters Program in the Kingdom of Thailand(Case of Lat Krabang)". This study was

conducted by Nippon Koei Co., Ltd., under a contract to JICA, during the period from

September 2004 to August 2006. The report consists of Summary and Main Report.

The report presents recommendations for the policy to develop the subcenter in Bangkok

Metropolitan Administration territory, which reflects the results of master plan for subcenter's

program.

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

Ministry of Foreign Affairs. We are also most grateful for the cooperation and assistance from

the officials concerned in Thailand, the JICA Bangkok Office, and the Embassy of Japan in

Thailand. The Final Report is a fruit of excellent collaboration of all participants in this study.

Yours Faithfully,

Koji Yamada

Team Leader, JICA Study Team

The Study on Implementation of the BMA subcenters Program in the Kingdom of

subcenters frogram in the Kingdom o

Thailand(Case of Lat Krabang)

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Monetary Exchange Rate

(As of March 2006)

US\$ = 38.947 Baht

THE STUDY ON IMPLEMENTATION OF THE BMA SUBCENTERS PROGRAM IN THE KINGDOM OF THAILAND (CASE OF LAT KRABANG)

Final Report

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ABBREVIATIONS

ADB AFTA	Asian Development Bank ASEAN Free Trade Area	ICT	Information Communication
ASEAN	Association of Southeast Asian	IEAT	Technology Industrial Estate Authority of
	Nations	ILAI	Thailand
B/C	Benefit / Cost Ratio	IEE	Initial Environmental
BCH	Bangkok - Chonburi Highway		Examination
BCP	Bangkok Comprehensive Plan	IO	Input Output
BCR	Building Coverage Ratio	ITF	Inter-modal Transit Facilities
BECM	Bangkok Extended City Model	JBIC	Japan Bank of International
BIRR	Bangkok Inter-Bank Offered Rate	JDIC	Cooperation
BOD	Biochemical Oxygen Demand	JICA	Japan International Cooperation
BMA	Bangkok Metropolitan		Agency
	Administration	LKSD	Lat Krabang Subcenter
BMR	Bangkok Metropolitan Region		Development
BRT	Bus Rapid Transit	LR	Land Readjustment
BTS	Bangkok Mass Transit System	LRT	Light Rail Transit
CAT	Communication Authority of	M/M	Minutes of Meeting
	Thailand	M/P	Master Plan
CBD	Central Business District	MEA	Metropolitan Electricity Authority
DOH	Department of Highways	MAP	Million Annual Passengers
DOL	Department of Land	MIT	Massachusetts Institute of
DPT	Department of Public Works and	IVIII	Technology
DII	Town & Country Planning	MOI	Ministry of Interior
EGAT	Electricity Generation Authority	MOT	Ministry of Transport
LOAI	of Thailand	MRTA	Mass Rapid Transit Authority
EIA	Environmental Impact	MSL	Mean Sea Level
LIA	Assessment	MSU	Main Switching Unit
EIRR	Economic Internal Rate of Return	MWA	Metropolitan Waterworks
ETA	Expressway and Rapid Transit	IVI VV A	Authority
LIA	Authority	NBIA	New Bangkok International
FAR	Floor Area Ratio	NDIA	Airport
FDI	Foreign Direct Investment	NEF	Noise Exposure Forecast
F/S	Feasibility Study	NESDB	National Economic and Social
FY	Fiscal Year	NESDD	Development Board
GDP	Gross Domestic Product	NGO	Non-Governmental Organization
GIS	Geographic Information System	NHA	National Housing Authority
GPP	Gross Provincial Product	NLR	Noise Level Reduction
HWL	High Water Level	NPV	Net Present Value
ICAO	International Civil Aviation	O(B)RR	Outer (Bangkok) Ring Road
ICAO	Organization	ODA	Official Development Aid
ICD	Inland Container Depot	O&M	Operation and Maintenance

ABBREVIATIONS

Office of Natural Resources and

ONEP Environmental Policy and

Planning

Office of Transport and Traffic

OTP Policy and Planning

Pollution Control Department

PCD under ONEP

PCM Public Consultation Meeting
PMC Project Management Consultant

PPP Public Private Partnership

PS Pumping Station

PVD Perforated Vertical Drain

RDD Research, Development & Design
REIT Real Estate Investment Trust
RSU Remote Switching Unit

ROW Right-of-Way

SBIA Second Bangkok International

Airport

SADP Suvarnabhumi Aerotropolis

Development Plan

SEA Strategic Environmental

Assessment

SPC(V) Special Purpose Company

(Vehicle)

SRT State Railway of Thailand

TOR Terms of Reference

TOT Telecommunication Organization

of Thailand

WECPNL Weighted Equivalent Continuous

Perceived Noise Level

MEASUREMENT UNITS

Extent

 $cm^2 = Square-centimeters$

 m^2 = Square-meters

 $km^2 = Square-kilometers$

ha. = Hectares $(10,000 \text{ m}^2)$

rai = 0.16 Hectares

Volume

 $cm^3 = Cubic-centimeters$

 $m^3 = cu.m = Cubic-meters$

l = Liter

Length

mm = Millimeters

cm = Centimeters (cm = 10 mm)

m = Meters (m = 100 cm)

km = Kilometers (km = 1,000 m)

wah = 2 Meter

Weight

g = Grams

kg = Kilograms

ton, t = Metric tonne

Energy

kcal = Kilocalories

W = Watt

kW = Kilowatt

V = Volt

kV = Kilovolt

MJ = Megajoule

Time

sec, s = Seconds

min = Minutes

h, hr = Hour

d = Day

Others

% = Percent

⁰C = Degree Celsius

K = Kelvin

lx = Lux

KP = Kilopascal

MP = Megapascal

1. INTRODUCTION

1.01 Background

Thailand has a national population of about 61.8 million with a land area of about 514,000 km². In the Bangkok Metropolitan Authority (BMA) jurisdiction an estimated population of 5.78 million resides, or nearly 10% of the national total, which alone indicates the heavy concentration of the population in the capital area. The Bangkok Metropolis has grown to be one of the most populated cities in the world, and one of the most active economic centers in South East Asia.

The growth of the Bangkok Metropolis has generally been driven by urbanization by the actions of individuals and by ad-hoc land development. As the public sector played a light and small role in urban development in the city, the urbanizing land developments are initiated primarily by the private sector for commercial purposes. This is thought to be one of the reasons why the road network in Bangkok is poorly devised in built-up areas, which, in conjunction with the over concentration of population in the city center area, causes great traffic congestion in the city center area. Unplanned urban sprawl outwards is in progress that causes not only traffic jams, but various problems relating to the urban living environment, including mixing of conflicting functions such as residential and industrial which is potentially hazardous to residents, lack or insufficient provision of public services and resultant deteriorating living environment.

In order to counter this issue, BMA has long been advocating a policy for shifting the urban structure from the present mono-centric to multi-centric one by introducing subcenters around the fringe of the existing city center. Lat Krabang is located in the vicinity of the new international Bangkok airport which is under construction now, and is considered to be one of the most attractive locations and the one with the highest priority for development. The Lat Karabang subcenter plan has been recognized in the comprehensive plan of MBA as well as in the regional development plans for the area around the new airport.

1.02 Objective of the study

The objective of the study on implementation of the BMA subcenters program in the Kingdom of Thailand (hereinafter referred as to "the Study") consists of the following three subjects;

- 1) To formulate a strategic development plan for the Lat Krabang area (hereinafter referred as to "the Subcenter Area") to develop a well-ordered and sound new urban area.
- 2) To formulate a basic plan for the pilot project area (hereinafter referred as to "the Pilot Area") which will be selected in the Subcenter Area for the pre-feasibility study of the land readjustment method, and
- 3) To implement capacity building for the counterparts and Thai officials who take charge of the city planning, transportation planning, land readjustment, and environment and social assessment.

1.03 Study Area

The study for the master plan will be carried out in the Subcenter Area. In the master plan, a pilot area will be selected to formulate the basic plan of the land readjustment method in the pre-feasibility study level. An outline of the study areas are presented in the following table.

Table 1.01: Outline of the Study Areas

04 1		D				
Study	Land Area	Programs				
Area						
BMA	1,565 km2	• to recognize the urban structure and analyze issues to				
	1,5 05 Km2	· ·				
area		be solved for the urbanization of the BMA area and				
		to define the roles and functions of the subcenter area.				
		• to define the foles and functions of the subcenter area.				
Subcenter	App. 2,000ha	to formulate a strategic development plan,				
area		• to specify urban functions to be introduced into the				
		1 2				
		subcenter area and formulate a planning framework,				
		• to formulate a land use plan and public facilities and				
		utilities plans,				
		<u>*</u>				
		• to formulate an implementation plan, and to select the				
		pilot area.				
Pilot area	area to be selected in the strategic	• to formulate a basic plan for the land readjustment and				
I not area		- to formulate a basic plan for the land readjustment and				
	development plan	• to examine the validity of the land readjustment in the				
		pre-F/S level.				
		pre-178 rever.				

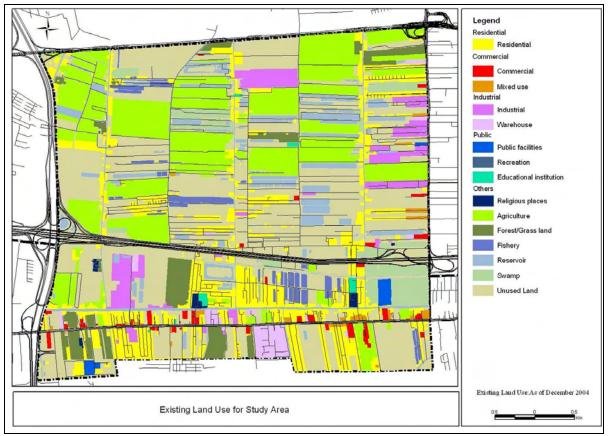


Figure 1.01: Existing Land Use in the Subcenter Area

1.04 Outline of the Work Plan

The study was started in September 2004 and is scheduled to complete in July 2006 with a study period of 23 months. The major work items and the schedule are shown in the following work flow.

Year	2004			2005					2006				
i eai	the 1st year			the 2nd year					the 3rd year				
Month	9	10~2	3	4 ~ 7 8		9 ~ 12	1	2 ~ 3	4 ~ 5	6 ~	·7		
Process	Home	1st field	1st home	2nd field	2nd field	3rd field	3rd home	4th field	5th field	4th h	ome		
Process	work	work	work	work	work	work	work	work	work	WO	rk		
Survey			Strateg	st phase: gic Development an (2,000ha)		Pre-F	2nd phase: Pre-F/S for Land Readj (50ha)						
Survey	situa		Land use planning	use plan Implementation planning		Land use puse puse lanning Implemen		Master planning		Implemen tatioin planning	Evaluatio projec enforcem validity	t nent	
Report	IC/R		PR1/R		IT/R		PR2 /R	PR		DF/R	F/R		

Figure 1.02: Outline of the Study

2. ANALYSIS AND CONDITIONS OF THE STUDY AREA

2.01 Bangkok Metropolitan Region Forming a Mega City

Bangkok Metropolitan Administration (BMA) is a part of the Bangkok Metropolitan Region (BMR), which consists of BMA and 5 surrounding provinces in the Central area of Thailand. The population in BMA in 2002 was 5.78 million and was growing at an average annual growth rate of 0.6%. The total population of BMR in 2002 was 9.67 million and was increasing at a higher annual growth rate of 1.2% in the last 5 years. The population of BMA accounts for about 9% of the total national population of 62.80 million.

	Year							
Area	1997	1998	1999 2000		2001	2002	Growth Rate 1998-02	
BMA	5,604,772	5,647,799	5,662,499	5,680,380	5,726,203	5,782,159	0.6%	
Samut Prakan	956,266	969,321	977,388	995,838	1,011,692	1,027,719	1.5%	
Nonthaburi	800,741	826,464	839,029	859,607	884,077	905,197	2.5%	
Nakorn Pathom	753,599	765,425	774,276	781,138	791,914	801,956	1.3%	
Phathumthani	592,328	616,636	633,994	654,701	679,417	708,909	3.7%	
Samut Sakon	407,146	416,393	421,738	428,814	435,588	442,914	1.7%	
Total - BMR	9,114,852	9,242,038	9,308,924	9,400,478	9,528,891	9,668,854	1.2%	
Thailand	60.818.227	61,466,178	61,661,701	61,878,746	62,308,887	62,799,872	0.6%	

Table 2.01: Changes in Population in and around Bangkok (1997-2002)

A city with an extremely large population of about 10 million in a continuous urban area such as Bangkok is called a megacity. There are about 20 megacities in various parts of the world². A megacity causes various urban problems arising from the size of the city; including traffic congestion in the city center area; environmental problems such as air and water pollution; high property prices; high costs for building infrastructure; and long hours of commuting.

2.02 Bangkok in the Future

The economic forecast for provinces in Thailand, including BMA and its vicinity, are published by NESDB as part of its national economic projection.

(1) Population

The population of BMA and its surroundings are forecast by NESDB. The population of the greater area of Bangkok denoted by BMR will reach 17 million in 2035, of which 7.8 million will reside in BMA area. The increase in population accrues more on the outskirts of Bangkok, showing a high increase rate in Nonthaburi, Phathumthani and Samut Prakan.

¹ It is known that the population statistics of BMA excludes unregistered population that may account for about 50% of the registered population. As all other statistical data, including the GPP and employment, are based on the registered population for the most part, this report shall have the statistical data based on the registered population.

² Thomas Brinkhoff, City Population (http://www.citypopulation.de/)

Table 2.02: Population Forecast in and around Bangkok (2005-2035)

Area		Ye	ear	Growth Rate			
Alta	2005	2015	2025	2035	2005-15	2015-25	2025-35
BMA	6,796,000	7,298,000	7,592,000	7,777,000	0.7%	0.4%	0.2%
Samut Prakan	1,231,000	1,665,000	2,115,000	2,581,000	3.1%	2.4%	2.0%
Nonthaburi	1,157,000	1,696,000	2,337,000	3,092,000	5.0%	5.0%	4.0%
Nakorn Pathom	946,000	1,088,000	1,175,000	1,221,000	1.4%	0.8%	0.4%
Phathumthani	731,000	998,000	1,280,000	1,579,000	3.2%	2.5%	2.1%
Samut Sakon	510,000	629,000	730,000	814,000	2.1%	1.5%	1.1%
Total - BMR	11,371,000	13,374,000	15,229,000	17,064,000	1.6%	1.3%	1.1%
Thailand	64,763,000	69,060,000	72,286,000	74,421,000	0.6%	0.5%	0.3%

Source: Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

(2) Employment and Economic Activities

The GPP, or Gross Provincial Product, for BMA area has been projected by NESDB for three decades starting from 2005 up to 2035. According to the projections, the GPP of BMA area will grow at an average annual rate of 5.9% in the ten year period from 2005 to 2015, 5.5% from 2015 to 2025, and 4.7% from 2025 to 2035.

The sum of regional GPPs is the Gross National Product shown by Provincial administrative area. Because the GPP is a product of the number of employees and the gross product per worker, the source of growth of GPP will accrue from an increase in either of these two factors. The Study Team projected the annual growth rates of employment and gross product per worker as in the following Table

Table 2.03: Projection of GPP and Employment of BMA

Item	Economic Parameters					Growth rate		
	Unit	2005	2015	2025	2035	05-15	15-25	25-35
Gross Provincial Produc	Million Bt	2,130,000	3,788,000	6,469,000	10,233,000	5.9%	5.5%	4.7%
Employment	Persons	3,586,476	3,915,663	4,105,249	4,387,043	0.9%	0.5%	0.7%
Gross Product/Worker	Bt/worker	593,898	967,397	1,575,788	2,332,551	5.0%	5.0%	4.0%
Population	Persons	6,796,000	7,298,000	7,592,000	7,777,000	0.7%	0.4%	0.2%
Emp/Pop ratio	%	52.8%	53.7%	54.1%	56.4%	-	-	-

Source: Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003 & Statistics Profile of BMA, 2003

As the increase in the employment is capped by the limited population growth (and thereby limited increase in work age population), the main part of the PGG growth will have to accrue from the increasing gross product per worker. The increase in GPP/worker was projected to be 5.0% for the decades from 2005 to 2015 and from 2015 to 2025, and 4% from 2025 to 2035. The growth in employment was thus estimated to be 0. 9% for the decade from 2005 to 2015, 0. 5% from 2015 to 2025, and 0. 7% from 2025 to 2035.

According to this projection, the total employment in BMA will increase from 3. 59 million in 2005 to 4. 29 million in 2035, which means that about 800,000 new jobs will have to be created anew in BMA area.

With regard to the sector-wise projection of GPP, the following is available in the Study for the Suvanabhumi Aerotropolis Development Plan. Although the projection seems to be based on a uniform growth rate, and may not point to the growth potential of specific sectors, it is shown that the future increase in GPP will be borne by the expansion of the Manufacturing, Wholesale & Retail, Hotel and restaurants, transport and other services.

Table 2.04: Forecast of GPP Structure of BMA

CDD	Year				Growth 2005-35		
GPP	2005	2015	2025	2035	Value	Share	
Agriculture	14.2	25.2	43.0	68.0	53.8	0.7%	
Manufacturing	668.7	1,189.2	2,031.2	3,212.9	2,544.2	31.4%	
Wholesale & retail	451.5	803.0	1,371.5	2,169.4	1,717.9	21.2%	
Hotel & restaurants	371.3	660.3	1,127.8	1,784.0	1,412.7	17.4%	
Transport	296.0	526.4	899.1	1,422.2	1,126.2	13.9%	
Other services	328.2	583.6	996.8	1,576.7	1,248.5	15.4%	
Total	2,129.9	3,787.7	6,469.4	10,233.2	8,103.3	100.0%	

Source: Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

2.03 BMA Urban Planning Policy Context

(1) Suburban expansion of urban areas

Looking at the urban structure of BMA, the changes in the urban population are characterized by high population growth on the fringe of the city center, while stable or slowly decreasing population in city center zones. The population growth is going outwards to peri-urban to suburban areas away from the city center in the recent years.

This indicates a somewhat saturated urban development potential in the city center area with lack of land plots suitable for urban development, while ample urban development is in progress on the fringe of the urban area where lands suitable for urban development are ample and less costly. Suburban expansion of the city needs to be looked after cautiously, as quick and unplanned expansions in the form of urban sprawl shall pose future urban environmental and services problems.

(2) Restructuring of Urban Structure in BMA Area

BMA has consistently seen the problem of excessive accumulation of urban and economic activities in the inner city area as an obstacle against sound growth of the Bangkok Metropolis. The first outspoken proposal for a mono-centric to a multi-centric, or poly-centric, urban structure was made in the Bangkok Plan undertaken jointly with the planners of MIT and BMA in 1995. This planning issue of changing the basic urban structure has been a focus of endeavors to restrain the further growth of the inner city, while intending to introduce suburban urban areas of a relatively low density residential character with abundant greenery and open space.

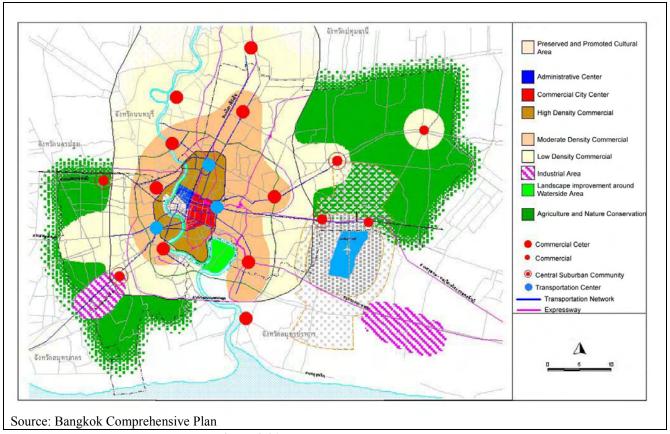


Figure 2.01: Bangkok Future Plan

(3) Comprehensive Plan

BMA formulated the Comprehensive Plan of Bangkok Update No. 2 in May, 2003. The focus of the plan was concentrated in the following six visions.

Table 2.05: Matrix of Visions, Policies and Targets of the Comprehensive Plan Update 2

Vision	Target	Policy	Principal Measures
1. Metropolis	To maintain and	Conservation of	Conserve historic sites and ruins
predominating in art	rehabilitate sites	Rattana Kosin	Improve communities at historic sites
and culture, with a	with value in art,	and Thon Buri	Improve landscape
national uniqueness	architecture, history	with tradition	Promote control measures
	and archeology	and culture	Promote economic activities
2. Metropolis with	To erase congestion	Development of	Improve the slums
Quality of life of	by extending	residential area	Rehabilitate rivers, moats, canals,
people with	development with	in the inner city	agricultural land and coasts
environmental	quality of life and	and adjoining	Develop infrastructure
conservation and	public	areas	Prescribe control measures on land
natural resources	infrastructure		utilization
			Control development to cope with
			infrastructure development
3. Metropolis that is	Develop a business	Develop	Create commercial centers at various
the Center of	area that can	commercial areas	levels
economic activities	compete with other	in the city center,	Promote infrastructure development
and technology of the	metropolitan areas	and Subcenters	Prescribe control measures on land
nation and Southeast	in Southeast Asia	in the suburbs	utilization
Asia			Improve landscape
4. Metropolis that is	Add elegance to the	Develop a center	Develop and improve the governmental

Vision	Target	Policy	Principal Measures
the center of	area of social	of public	institutions
administration, institutions and international organizations	institutions and administration of the county and BMA	administration of the country and BMA	Prescribe control measures on land utilization and architectural design Improve landscape
5. Metropolis that is flexible and convenient with a communication and transport network	Promote mass transit systems and integrate communications network	Increase connections to mass transit in the city and to/from SBIA	Balance distribution of population and employment to reduce trips Connect mass transit and car transport and public transport Develop connections to SBIA
			Control traffic by car in the inner city and historic district Extend sufficient social services to suburban residents

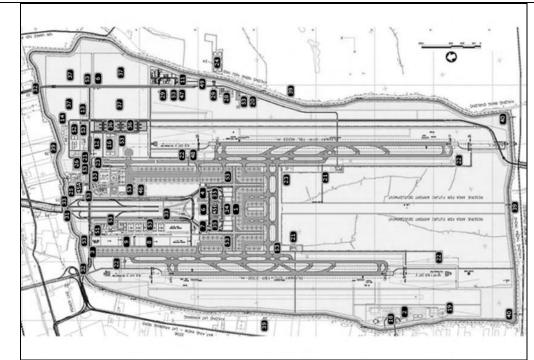
Source: Comprehensive Plan Update 2 Chapter 6

The current Comprehensive Plan focuses on the desired characteristics of the Bangkok metropolis as hosting the national capital, flexible and convenient with modern advanced technology and high quality of life for the urban residents, while paying due attention to the historical heritage and natural environment. It is noteworthy that the BMA vision focuses on Vision3: a Metropolis that is the Center of economic activities and technology of the nation and Southeast Asia, in which the creation of the subcenters in the suburbs is envisioned as the target, and Vision 5: a Metropolis that is flexible and convenient with a communication and transport network, emphasizing the increased connections by mass transit in the city and to/from SBIA.

The structure of urban development is indicated in the overall structure of the comprehensive plan. The inner city, which has been and will be serving the metropolis as the primary city center, will be rehabilitated and improved with public transport and telecommunications networks, while the peri-urban areas (adjoining to the city center) will accommodate the increasing population. In the suburbs, more attention is paid to conservation of natural landscape and agricultural land, while some selected locations, such as the Lat Krabang, Subcenter development, will be implemented to ease the congestion in the inner city. The areas outside of this will be reserved as the Buffer Zones, as newly stipulated in Update 2, to avoid outward urbanization expansion without control. The Update 2 took effect in May 2006.

2.04 Development of the New International Airport of Bangkok

The new international airport of Bangkok, called the Suvarnabhumi Airport, is now under construction 25 km west of the center of Bangkok Metropolis. The site is adjacent to the Lat Krabang Subcenter area. The new airport site has an area of about 3,000 ha (20,000 rai), on which two runways, one 4,000 m and the other 3,700 m, and the estimated number of annual passengers in the initial capacity is 45 million. This new airport will be one of the largest airports in Southeast Asia, and aims to establish itself as Southeast Asia's aviation and tourism hub. The ultimate development plan is for projected annual 100 million passengers, although the target year has not been defined yet.



- 1. Passenger Terminal Facilities
- 2. Royal Terminal (on hold)
- 3. Airmail Facilities
- 4. AOT Facilities and AIMS Building
- 5. Security Facilities
- 6. Airport Hotel
- 7. Control Tower and ATC Facilities
- 8. Cargo Facilities (free zone)
- 9. Express Freight Facilities (free zone)
- 10. Catering Facilities
 11. Airport Maintenance Facilities
- 12. Ground Service Equipment Maintenance Facilities
- 13. Medical Facilities
- 14. Social and Staff Facilities
- 15. Car Rental Facilities
- 16. Aircraft Maintenance Facilities
- 17. Petrol and Car Care Services
- 18. General Aviation Facilities

- 19. Heliport
- 20. Fire Fighting Training Ground
- 21. Rescue and Fire Fighting Facilities
- 22. Airfield Lighting Building
- 23. Intoplane Fuel Services
- 24. Aviation Fuel Depot Facilities (external)
- 25. Main Transformer Station
- 26. Water Supply Station
- 27. Water Treatment Plant
- 28. Waste Water Treatment Facilities
- 29. Radar Facilities
- 30. Meteorological Facilities
- 31. Main Access Route
- 32. Secondary Access Road
- 33. Rail Access Route
- 34. Railway Station
- 35. Public Car Parking
- 36. Long-Term Car Parking Area
- 37. Area Reserved for the Development of other Facilities

- 38. Airport related Business
- Development Center
- 39. Perimeter Polder Dike, Fence and -Road
- 40. Polder Pumping Station and Ponding Area
- 45A. Cogeneration Plant
- 45B. Central Plant/District Cooling Plant
- 46. Domestic Cargo
- 47. Transmitter Station
- 48. Aircraft Sewage Disposal Building
- 49. Central Solid Waste Transfer Building
- 50. Thai City (TG operation)
- 51. CFZ Common Facilities
- 52. Bus Transit Terminal
- 53. Utilities Distribution System

Note: The numbers correspond to those on the plan in the next page.

Figure 2.02: Plan for Suvarnabhumi International Airport