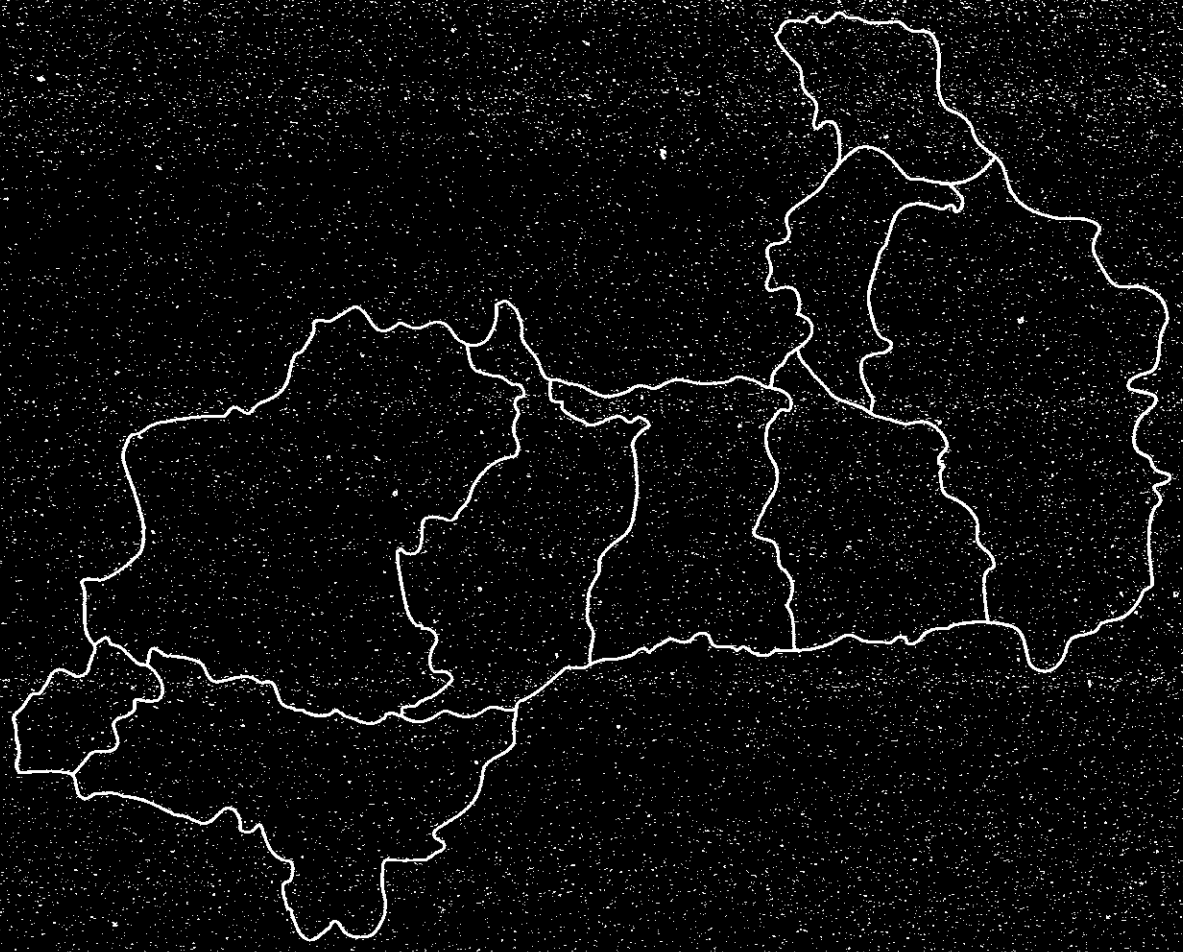
JAPAN INTERNATIONAL COOPERATION AGENCY

THE GOVERNMENT OF THE KINGDOM OF THAILAND
NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT BOARD

THE STUDY ON THE REGIONAL DEVELOPMENT PLAN FOR THE LOWER NORTHEAST AND THE UPPER EAST REGIONS IN THE KINGDOM OF THAILAND

FINAL REPORT



11. Socio-Economy and Social Systems

September, 1993

NIPPON KOEI CO., LTD.

JAPAN INTERNATIONAL COOPERATION AGENCY

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LEGEND

- International Boundary
- Provincial Boundary
- 202 National Highway (Number)
- Railway
- Airport
- National Park
- Major Tourism Attraction

Major City (Population)

- 100,000~500,000
- 50,000~100,000
- 25,000~ 50,000
- 10,000~ 25,000

N

SCALE

0 6.5 32.5 65.0

km

Khon Kaen

Bua Yai

Phimai

Satuk

Nakhon Ratchasima (Khorat)

Sung Noen

Sikhiu

Dan Kwian

Pak Tong Chai

Pak Chong

Chok Chai

Nang Rong

Buri Ram

Prakhon Chai

Phanom Rung

Muang Tam

Surin

Prasat

Prasart Kamphaeng Yai

Si Sa Ket

Huai Huat

Mukdahan

Savannakhet

Mukdahan

Yasothon

Amnat Charoen

Ubon Ratchatani

Pha Taem

Warin Chamrap

Phibun Mangsahan

Kaeng Tana

Chon Mek Border Point

Det Udom

Kantralak

Khao Phra Viharn

Phu Chong Nayoi

Bangkok Metropolitan Region

Khao Yai

Wang Takrai N.P.

Tha Plan

Nakhon Nayok

Prachin Buri

Kabin Buri

Sa Kaeo

Aranyaprathet

Eastern Seaboard

Phnom Penh

Laos

Cambodia

Note : Basic elements of this map composition were derived from the Geographic Information System (GIS) Database developed in the study.

Location Map of Study Area

The Study on the Regional Development Plan for the Lower Northeast and Upper East Regions in the Kingdom of Thailand

Abbreviations

AAT	Airports Authority of Thailand [MOTC]
ADB	Asian Development Bank
AED	Agricultural Extension Department [MOAC]
BAAC	Bank for Agriculture and Agricultural Cooperatives [MOF]
BMA	Bangkok Metropolitan Area
BMR	Bangkok Metropolitan Region
BOB	Bureau of the Budget [OPM]
BOI	Board of Investment [OPM]
BOT	Bank of Thailand
CAO	Changwat Administration Organization [MOIT]
CAT	Communication Authority of Thailand [MOTC]
CDD	Community Development Department [MOIT]
CPD	Cooperatives Promotion Department [MOAC]
CRDP	Coordinating Committee for the Royal Development Projects
DFPOT	Dairy Farming Promotion Organization of Thailand [MOAC]
DOA	Department of Aviation [MOTC]
DOH	Department of Highways [MOTC]
DOLA	Department of Local Administration [MOIT]
DRDC	District Rural (or Regional) Development Committee
DTEC	Department of Technical and Economic Cooperation [OPM]
EGAT	Electricity Generating Authority of Thailand [OPM]
ESBC	Eastern Seaboard Committee [NESDB]
ERTAT	Expressway and Rapid Transit Authority of Thailand [MOIT]
ETOT	Express Transportation Organization of Thailand [MOTC]
FIO	Forest Industry Organization [MOAC]
GCST	Government Cold Storage Organization [MOAC]
IEAT	Industrial Estate Authority of Thailand [MOID]
IFCT	Industrial Finance Corporation of Thailand
IPD	Industry Promotion Department [MOID]
ITD	Internal Trade Department [MOC]
JICA	Japan International Cooperation Agency
JPPCC	Joint Public / Private Consultative Committee [BOI]
LDD	Livestock Development Department [MOAC]
LNE-UE	Lower Northeast - Upper East
LTD	Land Transport Department [MOTC]
MOAC	Ministry of Agriculture and Cooperatives
MO	Marketing Organization [MOIT]
MOC	Ministry of Commerce
MOD	Ministry of Defence
MOE	Ministry of Education
MOF	Ministry of Finance
MOFF	Marketing Organization for Farmers [MOAC]
MOID	Ministry of Industry
MOIT	Ministry of Interior
MOPH	Ministry of Public Health
MOTC	Ministry of Transport and Communications
MOUA	Ministry of University Affairs
MSTE	Ministry of Science, Technology and Environment
NEB	National Environment Board [MSTE]
NESDB	National Economic and Social Development Board [OPM]

NESDC	National Economic and Social Development Committee
NHA	National Housing Authority [MOIT]
NRDC	National Rural (or Regional) Development Committee
OARD	Office of Accelerated Rural Development [MOIT]
OCSC	Office of the Civil Service Commission [OPM]
OECF	Overseas Economic Cooperation Fund (Japan)
OPM	Office of Prime Minister
OPP	Office of Policy and Planning [MOIT]
PDA	Provincial Development Committee
PEA	Provincial Electricity Authority [MOIT]
PRDC	Provincial Regional Development Committee
PRDCC	Provincial Rural (or Regional) Development Coordination Center
PWA	Provincial Waterworks Authority [MOIT]
PWD	Public Works Department [MOIT]
PWO	Public Warehouse Organization [MOC]
RFD	Royal Forest Department [MOAC]
RID	Royal Irrigation Department [MOAC]
SNRDC	Office of the Secretary to the National Rural (or Regional) Development Committee
SRT	State Railway of Thailand [MOTC]
TAT	Tourism Authority of Thailand [OPM]
TCPD	Town and Country Planning Department [MOIT]
TOT	Telephone Organization of Thailand [MOTC]
TRDC	Tambon Rural Development Committee
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
USAID	United State Agency for International Development

Abbreviation of Measures

Length

mm	=	millimeter
m	=	meter
km	=	kilometer

Area

ha	=	hectare
km^2	=	square kilometer

Volume

l	=	lit = litre
m^3	=	cubic meter
MCM	=	million cubic meter

Weight

mg	=	milligram
g	=	gram
kg	=	kilogram
t	=	ton = MT = metric ton

Time

sec	=	second
hr	=	hour
d	=	day
yr	=	year

Money

US$	=	U.S. dollar
B	=	Baht

Energy

kcal	=	kilocalorie
J	=	joule
MJ	=	megajoule
HP	=	horsepower
TOE	=	tons of oil equivalent
kW	=	kilowatt
MW	=	megawatt
kWh	=	kilowatt-hour
GWh	=	gigawatt-hour

Others

%	=	percent
°	=	degree
'	=	minute
°C	=	degree Celsius
cap.	=	capita
md	=	man-day
mil.	=	million
no.	=	number
pers.	=	person
PCU	=	passenger car unit
ppb	=	parts per billion

Unit Conversions

1 rai	=	0.16 hectare

PART I

SOCIO-ECONOMY

Final Report
Sector Report : Part I Socio-Economy

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1. Population

Size and growth

The Study Area had a population of 9,909 thousand in 1990 accounting for 18.2 % of the national population (54,532 thousand). The Study Area's population grew at 2.1 % per year between 1980 and 1990, which was faster than that of the nation at 1.7 % per year for the same period. This high population growth rate in the Study Area could be attributed to high fertility in the Study Area as observed from the mean number of children ever born and still alive per ever-married woman as shown below.

Mean Number of Ever-born and Living Children per Ever-married Woman

Area	Number of Born Children	Number of Living Children
Bangkok	2.3	2.2
Central	2.8	2.6
North	2.7	2.5
Northeast	3.2	3.0
South	3.1	3.0

As shown in Table 1, Nakhon Ratchasima had the largest population in the Study Area amounting to 2,375 thousand or 24.0 % of the Study Area. This was followed by Ubon Ratchathani (1,870 thousand or 18.9 %). The third group constituted Buri Ram, Si Sa Ket and Surin each accounting for 12 to 14 % of the Study Area. Prachin Buri, Yasothon, Mukdahan and Nakhon Nayok accounted for lower proportions of the Study Area's total population : 7.9 %, 5.3 %, 2.7 % and 2.2 % respectively. In terms of population growth , Mukdahan, Prachin Buri and Yasothon showed growth rates higher than the area's average with 4.2 %, 3.3 % and 2.8 % respectively.

Structure

Reflecting a high fertility in the region, the population has a higher proportion of younger genrations as shown below.

Age group	Northeast (%)	Nation (%)
below 10	20.8	18.1
below 20	43.7	39.2

This fact indicates that in the future there will be more younger generations entering into labor market in the Study Area than in other regions.

Population density

As shown in Table 2, population density of the Study Area was 111 per square kilometer in 1990, which was slightly above the national figure of 106. Compared with other regions this level of density was higher than the North (62) and the South (98) regions, but lower than the Bangkok Metropolitan Area (3,754) and the Central region(118).

2. Gross Provincial Product (GPP)

Overall trend

The Study Area's gross provincial product (GPP) amounted to 42,874 million Baht in 1989 in 1972 price level, accounting for 7.5 % of gross domestic product of Thailand (631,610 million bahts). As shown in Table 3, the Study Area showed higher economic growth of 7.2 % per year between 1983 and 1985 than that of the nation (5.3 % per year). In the second half of the 1980's, however, the trend reversed and the national economy grew at a remarkable rate of 9.9 % per year, one of the highest in the world, while the Study Area's growth rate in GPP declined to 5.6 % per year. As a result the the Study Area's share of GPP in GDP declined from 8.2 % in 1983 to 7.5 % in 1989. After the Study Area experienced a slow economic growth in 1986 and 1987, however, the economic growth seems to have begun accelerating in 1988 and 1989 registering growth rates of 10.5 % and 7.3 % per annum respectively.

Per capita GPP

In terms of per capita GPP, the Study Area's level is quite low compared with the national average as presented in Table 4. In 1989 per capita GPP amounted to 12,239 bahts which was only 38 % of per capita GDP (32,028 bahts). The differntial increased over six years between 1983 and 1989 from 44 % to 38 %. This increasing disparity could be attributed more to the rapid economic growth of the nation than to stagnation of the Study Area's economy.

GPP by province

Nakhon Ratchasima is the largest province in the Study Area in terms of the size of economy accounting for 29 % of the total GPP of the Study Area (Table 5). This was followed by Ubon Ratchathani with 17 % of the total. The third group includes Prachin Buri, Buri Ram, Surin and Si Sa Ket each accounting for 10 to 12 % of the Study Area's GPP. Contribution of other three provinces , Nakhon Nayok, Mukdahan and Yasothon, are lower ranging between 2 to 4 %.

Per capita GPP by province

Table 6 shows per capita GPP by province. GPP per capita of all the provinces in the Study Area are lower than GDP per capita ranging between 9,418 bahts to 20,602 bahts or 29% to 64% of GDP per capita in 1989. Two provinces in the Upper East region, Nakhon Nayok and Prachin Buri, show higher GPP per capita. Nakhon Ratchasima is the highest among the lower Northeastern provinces with 46% of the national level.

Structure of GPP

Table 7 shows each province's economic structure in comparison with the national economy. In terms of industrialization, the Study Area is less developed than the nation as a whole with the industrial sector's share at 17% while that for the nation was 36% in 1989.

Among the provinces, Nakhon Ratchasima and Buri Ram are comparatively more advanced with industrial sector's shares exceeding 20 %. Ubon Ratchathani had a

similar share to the area's average at 16.3 %. Other four provinces are less industrialized with their shares ranging from 9 to 14%.

In terms of distribution of each sector across the provinces, the industrial sector shows high concentration in the two provinces of Nakhon Ratchasima and Ubon Ratchathani, both combined accounting for 53 % of the toal industrial production in the Study Area. The agriuculture and service sectors are more evenly distributed among provinces.

3. Labor Force

Table 8 presents a breakdown of the population more than 13 years of age into economic status in Thailand and the Northeast. The table shows that the proportion of economically active population of the Northeast is slightly higher than the nation (76.8% and 74,1% respectively.) Those looking for job is higher in the region at 4.8% compared with 3.8% for the nation.

An outstanding contrast is the ratios of "employed" and "waiting for farm season". Employed population accounts for 52% of the economically active population in the nation, whereas that of the region is only 37%. On the contrary, those waiting for farm season in the region is 35% of the economically active population as opposed to 18% for the nation. This is the outcome of a difference in the laborforce structure in the nation and the Northeast region. As shown below, population in the agriculture sector accounts for 85% of the population over 13 years old in the region, while the ratio is 66% for the nation.

Breakdown of Population over 13 years of age into sector

Sector	Nation	Northeast
	(in thousand)	
Agriculture	20,930	9,826
Industry	3,036	318
Service	7,758	1,408
Total	31,724	11,552
	(%)	(%)
Agriculture	66.0	85.1
Industry	9.6	2.8
Service	24.4	12.1
Total	100.0	100.0

4. Household Economy

Data on household economy could be obtained from socio-econmic surveys conducted by the National Statistical Office from year to year. A comparison of average monthly income of households in the Northeast and whole kingdom is presented for three points in 1981, 1986 and 1988 in Table 9 and summarized below.

Average Husehold Income of Northeast
Compared with Nation (Nation=100)

Year	Total	Municipal Area	Sanitary District	Villages
1981	74	96	96	85
1986	70	102	93	81
1988	75	89	108	88

Overall househod income of the region had been 26 to 30 % lower than the national level. Considering the larger size of an average household in Northeast(nation 4.4 and Northeast 4.7 in 1990), differential in terms of per capita household income would be larger. Over seven years, the difference has maintained almost stable.

Both in the nation and the region, average income in the rural area is less than half the municipal area. The trend, however shows that the disparity had narrowed over seven years both in the nation and the region.

Regarding sources of income, some differences are observed between city dwellers and rural population reflecting different pattern of income earning as the table below shows.

Main Sources of Income(in 1988, in %)

Source of Income	Municipal Area	Villages
Wage/salaries	45.6	19.2
Non-farm profit	26.4	11.1
Non-money Income	9.3	26.9
Farm Profits	1.0	21.7
others	17.7	21.1
Total	100.0	100.0

Nearly three fourths of city dwellers' income come from either wage/salaries or non-farm profits. Non-money income constitutes only 9.3 % in the town. Income sources in the rural area are more diversed. Non-money income is the largest accounting for 27% of the income, followed by farm profits (22%), wage/salaries (19%) and non-farm profits (11%).

5. Incidence of Poverty

While the analyses so far on income levels in terms of provincial product and household economy laid more emphasis on comparison between the region or Study area and the nation, the data on incidence of poverty gives more insight into absolute level of poverty in an area. It is possible to derive the proportion of population living under the poverty line, which is determined by a level of income that would ensure certain level of nutrition intaking. In the case of Thailand , the following levels of income were set as the poverty lines.

(Baht per capita per year)

Year	Rural area	Urban area
1975/76	1,981	2,961
1980/81	3,454	5,151
1985/86	3,823	5,834

Incidence of poverty in the nation and the Northeast is presented in Table 10 for three points of time by area and summarized as follows.

Poverty Incidence in Thailand and the Northeast

(%)

Year	Nation	Northeast
1975/76	30	45
1980/81	23	36
1985/86	30	48

Nearly half the population in the Northeast lives under the poverty line, while the ratio for the nation is much lower at 30 %. Over the period covering three points, poverty decreased both in the nation and Northeast in the second half of the 1970's, but grew in the 1980's. This reversing trend could be explained by the second oil crisis that led to lower economic growth in the early 1980's and lowering agriculture commodities prices in this period. The northeastern region with heavier dependence on the agriculture sector was more seriously affected by these economic trends and as a result the incidence of poverty expanded at a higher rate than the rest of the country. As Table 10 shows, villages and sanitary districts, especially those in Northeast, where agriculture production and related activities are the main economic activity, suffered most from the unfavorable economic condition compared with municipal areas.

6. Living Condition

Living condition of the population in the Study Area is looked into from the data on conditions of water supply, toilet facilities and durable household appliances.

The table below, a summary of Table 11, shows the sources of drinking water and other uses in the nation and the Northeast.

Sources of Water Supply (%)

Source	Nation	Northeast
	(drinking)	
tap water	20.1	6.9
well	40.5	44.7
rainwater	30.7	44.9
others	8.8	3.5
Total	100.0	100.0
	(other uses)	
tap water	29.7	14.2
well	58.3	76.3
river etc.	9.7	7.3
others	0.7	0.6
Total	100.0	100.0

The table shows that both for drinking and other purposes, tap water is accessible only to a limited portion of the population ranging from 20 to 30 % in the nation. In the Northeast region, the level is even lower at 7 % for drinking and 14% for other uses. Limited level of water supply system in the Northeast is supplemented by other sources such as well, either public or private, and rainwater. Dependence on surface water such as river and canal is lower in the Northeast, that might be a reflection of poorer water resources endowment in the region.

The condition of toilet facilites is shown in Table 12 and summarized below.

Toilet Facilities (%)

Toilet Facility	Nation	Northeast
(a) flush	6.2	3.9
(b) Moulded Bucket Latrine	77.9	73.7
(c) (a)+(b)	1.6	0.8
(d) None	11.9	20.5
(e) others	2.3	1.2
Total	100.0	100.0

Both in the nation and the Northeat, moulded bucket latrine is the most prevalent system adopted, accounting for about three fourths of all the households. Flush type, a more advanced system, is limited both in the nation and the region, but even lower in the Northeast accounting only for 3.9 %. The higher proportion of no toilet facility in the Northeast (21% as opposed to 12 % for the nation) indicates lower level of development in sanitary system in the region..

Table 13 shows the number of household with various types of durable household appliances in the nation and the Northeast. Lower level of economy, both at regional and household levels, result in lower degree of prevalence in terms of appliaces owned by the northeastern households. In other words, the population outside the region has enjoyed larger chances of receiving fruits of recent economic development through purchasing modern household appliances.

Ownership of some appliances are still limited to a part of the population nationwide such as video (12%), vacuum cleaner (4%), washing machine (6%) air conditioner

(3%), telephone (8%) and motor car (12%). The figures for these are even lower in the Northeast.

There are some appliances, which are quite or fairly prevalent in the nation, but significantly less so in the region. These include color television (46% vs. 26 %), iron (55% vs. 36%), electric rice cooker (61 % vs. 37%), refrigerator (37% vs. 18%) and motor cycle (41% vs. 28%).

An important contrast is observed in agriculture-related appliances. Although the region is more agriculture-oriented in the production structure and laborforce distribution than other regions, ownership of agriculture-related appliances such as water pump, ploughing machine and local farm truck is lower than other regions as below.

Agriculture-related Appliances (%)(overall)

Appliance	Nation	Northeast
waterpump	12.7	8.3
Ploughing machine	10.0	8.4
Local farm truck	2.8	2.0

Since the census data cover all types of household including non-farm household, which is higher in proportion in other regions than in the Notheast, the level of ownership of these appliances by farm household should show a sharper contrast. This could be infered by comparing the same ratios for non-municipal areas as below.

Agriculture-related Appliances (%)
(non-unicipal area only)

Appliance	Nation	Northeast
waterpump	14.8	8.6
Ploughing machine	12.3	9.0
Local farm truck	3.8	2.1

This comparison indicates that while the region is more dependent on agriculture, production and related activities are less mechanized, thus resulting in lower agriculture productivity and lower level of value added : a vicious circle of low income and technological improvemnt.

Tables

Table 1 Population in the Study Area by Municipality and Non-municipality Area in 1980 and 1990

Province	Total (a)	Municipality (b)	Non-municipality (c)	(b)/(a) (%)
		(in 1990)		
Nakhon Nayok	222,000	18,000	204,000	8.1
Prachin Buri	785,000	39,000	746,000	5.0
Nakhon Ratchasima	2,375,000	278,000	2,097,000	11.7
Buri Ram	1,357,000	57,000	1,300,000	4.2
Mukdahan	265,000	26,000	239,000	9.8
Yasothon	529,000	22,000	507,000	4.2
Si Sa Ket	1,286,000	34,000	1,252,000	2.6
Surin	1,220,000	39,000	1,181,000	3.2
Ubon Ratchathani	1,870,000	137,000	1,733,000	7.3
TOTAL	**9,909,000**	**650,000**	**9,259,000**	**6.6**
Kingdom	**54,532,000**	**10,207,000**	**44,325,000**	**18.7**
		(%)		
Nakhon Nayok	2.2	2.8	2.2	-
Prachin Buri	7.9	6.0	8.1	-
Nakhon Ratchasima	24.0	42.8	22.6	-
Buri Ram	13.7	8.8	14.0	-
Mukdahan	2.7	4.0	2.6	-
Yasothon	5.3	3.4	5.5	-
Si Sa Ket	13.0	5.2	13.5	-
Surin	12.3	6.0	12.8	-
Ubon Ratchathani	18.9	21.1	18.7	-
TOTAL	**100.0**	**100.0**	**100.0**	-
		(in 1980)		
Nakhon Nayok	206,087	11,227	194,860	5.4
Prachin Buri	565,974	33,788	532,186	6.0
Nakhon Ratchasima	1,948,287	97,009	1,851,278	5.0
Buri Ram	1,098,251	23,502	1,074,749	2.1
Mukdahan	174,903	0	174,903	0.0
Yasothon	400,002	17,498	382,504	4.4
Si Sa Ket	1,063,253	20,014	1,043,239	1.9
Surin	999,795	29,715	970,080	3.0
Ubon Ratchathani	1,617,963	96,390	1,521,573	6.0
TOTAL	**8,074,515**	**329,143**	**7,745,372**	**4.1**
		(%)		
Nakhon Nayok	2.6	3.4	2.5	-
Prachin Buri	7.0	10.3	6.9	-
Nakhon Ratchasima	24.1	29.5	23.9	-
Buri Ram	13.6	7.1	13.9	-
Mukdahan	2.2	0.0	2.3	-
Yasothon	5.0	5.3	4.9	-
Si Sa Ket	13.2	6.1	13.5	-
Surin	12.4	9.0	12.5	-
Ubon Ratchathani	20.0	29.3	19.6	-
TOTAL	**100.0**	**100.0**	**100.0**	-

Source: 1990 Population and Housing Census, Preliminary Report and 1980 Population and Housing Census

Table 2 Land Area and Population Density

Province	Land Area in sq.km	(%)	Population in 1990	Population Density (per sq.meter)
Nakhon Nayok	2,122.0	2.4	222,000	105
Prachin Buri	11,957.5	13.4	785,000	66
Nakhon Ratchasima	20,494.0	23.0	2375000	116
Buri Ram	10,321.9	11.6	1,357,000	131
Mukdahan	4,339.8	4.9	265,000	61
Yasothon	4,161.7	4.7	529,000	127
Si Sa Ket	8,840.0	9.9	1,286,000	145
Surin	8,124.0	9.1	1,220,000	150
Ubon Ratchathani	18,906.1	21.2	1,870,000	99
TOTAL	**89,267.0**	**100.0**	**9,909,000**	**111**
Whole Kingdom	**513,114.5**	**-**	**54,532,000**	**106**
Bangkok Metropolitan Area	1,565.2		5,876,000	3,754
Central	102,335.3		12,072,000	118
North	169,644.4		10,583,000	62
Northeastern	168,854.4		19,037,000	113
South	70,715.2		6,964,000	98

Source: 1990 Population and Housing Census, Preliminary Report

Table 3 Gross Domestic Product (GDP) and Gross Provincial Product (GPP) in the Study Area in 1972 Prices

(in million Baht)

Year	GDP		GPP		GPP/GDP
	Value	growth in %/year	Value	growth in %/year	(%)
1981	318,438	-	25,999	-	8.2
1982	331,379	4.1	27,384	5.3	8.3
1983	355,408	7.3	30,006	9.6	8.4
1984	380,738	7.1	32,830	9.4	8.6
1985	394,113	3.5	34,492	5.1	8.8
1986	413,489	4.9	35,187	2.0	8.5
1987	452,635	9.5	36,169	2.8	8.0
1988	512,467	13.2	39,965	10.5	7.8
1989	574,195	12.0	42,874	7.3	7.5
1990	631,610	10.0	n.a.	-	-
1983-85	-	5.3	-	7.2	-
1985-89	-	9.9	-	5.6	-

Source: (1) NESDB
(2) Quarterly Bulletin Vl.31, No.1 March 1991, Bank of Thailand

Table 4 GDP per Capita and GPP per Capita in Current Prices

Year	Nation			Study Area			GPP.PC/ GDP.PC
	Population (thousand)	GDP * (million Baht)	Per capita GDP (Baht)	Population (thousand)	GPP * (million Baht)	Per capita GDP (Baht)	(%)
1983	49,734	910,053	18,298	8,945	72,649	8,122	44
1985	51,683	1,014,399	19,627	9,262	80,116	8,650	44
1989	55,451	1,775,978	32,028	9,886	120,999	12,239	38
			(growth rate in % per year)				
83-85	1.9	5.6	3.6	1.8	5.0	3.2	-
85-89	1.8	15.0	13.0	1.6	10.9	9.1	-

* current prices

Source : NESDB

Table 5 Gross Provincial Product in the Study Area in 1972 Prices

(in million Baht)

Province	GPP			Growth Rate (%/year)		
	1983	1985	1989	1983-85	1985-89	1983-89
Prachin Buri	3,262	3,790	4,951	7.8	6.9	7.2
Nakhon Nayok	910	1,076	1,462	8.7	8.0	8.2
Nakhon Ratchasima	9,485	10,153	12,496	3.5	5.3	4.7
Buri Ram	3,546	4,346	5,224	10.7	4.7	6.7
Surin	3,321	3,534	4,335	3.2	5.2	4.5
Si Sa Ket	2,862	3,588	4,323	12.0	4.8	7.1
Ubon Ratchathani	4,558	5,497	7,153	9.8	6.8	7.8
Mukdahan	636	935	1,102	21.2	4.2	9.6
Yasothon	1,428	1,573	1,828	5.0	3.8	4.2
Total	30,008	34,492	42,874	7.2	5.6	6.1
		(%)				
Prachin Buri	10.9	11.0	11.5	-	-	-
Nakhon Nayok	3.0	3.1	3.4	-	-	-
Nakhon Ratchasima	31.6	29.4	29.1	-	-	-
Buri Ram	11.8	12.6	12.2	-	-	-
Surin	11.1	10.2	10.1	-	-	-
Si Sa Ket	9.5	10.4	10.1	-	-	-
Ubon Ratchathani	15.2	15.9	16.7	-	-	-
Mukdahan	2.1	2.7	2.6	-	-	-
Yasothon	4.8	4.6	4.3	-	-	-
Total	100.0	100.0	100.0	-	-	-

Source : NESDB

Table 6 Gross Provincial Product per Capita of Each Province in the Study Area in Current Prices

(Baht)

Province	GPP per Capita			Growth Rate (%/year)		
	1983	1985	1989	1983-85	1985-89	1983-89
Prachin Buri	11,270	11,796	17,716	2.3	10.7	7.8
Nakhon Nayok	11,264	12,551	20,602	5.6	13.2	10.6
Nakhon Ratchasima	10,847	10,502	14,745	-1.6	8.9	5.3
Buri Ram	7,166	7,866	10,692	4.8	8.0	6.9
Surin	7,105	7,326	10,013	1.5	8.1	5.9
Si Sa Ket	5,909	6,755	9,418	6.9	8.7	8.1
Ubon Ratchathani	6,545	7,535	11,145	7.3	10.3	9.3
Mukdahan	7,297	7,683	10,238	2.6	7.4	5.8
Yasothon	6,093	9,130	11,189	22.4	5.2	10.7
Total	**8,122**	**8,650**	**12,239**	**3.2**	**9.1**	**7.1**
Northeast	**8,026**	**8,352**	**11,981**	**2.0**	**9.4**	**6.9**
Nation	**18,298**	**19,627**	**32,028**	**3.6**	**13.0**	**9.8**
					(1983=100)	
	(% of Nation)			*1983*	*1985*	*1989*
Prachin Buri	62	60	55	100	98	90
Nakhon Nayok	62	64	64	100	104	104
Nakhon Ratchasima	59	54	46	100	90	78
Buri Ram	39	40	33	100	102	85
Surin	39	37	31	100	96	81
Si Sa Ket	32	34	29	100	107	91
Ubon Ratchathani	36	38	35	100	107	97
Mukdahan	40	39	32	100	98	80
Yasothon	33	47	35	100	140	105
Study Area	**44**	**44**	**38**	**100**	**99**	**86**
Northeast	**44**	**43**	**37**	**100**	**97**	**85**

Source : NESDB

Table 7 Structure of Gross Provincial Product by Province in 1989 in Market Prices

(Million Baht)

Province	Agriculture	Industry	Service	Total
Prachin Buri	3,847	2,325	7,859	14,031
Nakhon Nayok	1,004	398	2,883	4,285
Nakhon Ratchasima	9,060	7,117	18,016	34,193
Buri Ram	3785	3080	8,050	14,915
Surin	3,135	1,574	7,797	12,506
Si Sa Ket	3,506	1,104	7,398	12,008
Ubon Ratchathani	4,525	3,381	12,791	20,697
Yasothon	1,430	532	3,280	5,242
Mukdahan	951	429	1,742	3,122
Total	**31,243**	**19,940**	**69,816**	**120,999**
Nation	**271,443**	**635,622**	**860,342**	**1,767,407**
	(% distribution among sectors))			
Prachin Buri	27.4	16.6	56.0	100.0
Nakhon Nayok	23.4	9.3	67.3	100.0
Nakhon Ratchasima	26.5	20.8	52.7	100.0
Buri Ram	25.4	20.7	54.0	100.0
Surin	25.1	12.6	62.3	100.0
Si Sa Ket	29.2	9.2	61.6	100.0
Ubon Ratchathani	21.9	16.3	61.8	100.0
Yasothon	27.3	10.1	62.6	100.0
Mukdahan	30.5	13.7	55.8	100.0
Total	**25.8**	**16.5**	**57.7**	**100.0**
Nation	**15.4**	**36.0**	**48.7**	**100.0**
	(% distribution among provinces)			
Prachin Buri	12.3	11.7	11.3	11.6
Nakhon Nayok	3.2	2.0	4.1	3.5
Nakhon Ratchasima	29.0	35.7	25.8	28.3
Buri Ram	12.1	15.4	11.5	12.3
Surin	10.0	7.9	11.2	10.3
Si Sa Ket	11.2	5.5	10.6	9.9
Ubon Ratchathani	14.5	17.0	18.3	17.1
Yasothon	4.6	2.7	4.7	4.3
Mukdahan	3.0	2.2	2.5	2.6
Total	**100.0**	**100.0**	**100.0**	**100.0**

Note : Industry includes mining/quarrying, manufacturing and construction
Source : NESDB

Table 8 Population of 13 Years of Age and Over by Economic Status

Economic Status	Nation	Northeast
Economically active	30,490	10,494
employed	21,467	5,054
looking for job	1,545	657
waiting for farm season	7,478	4,783
Non-active	9,923	2,916
Unknown	739	249
Total	41,152	13,659
	(%)	
Economically active	74.1	76.8
employed	52.2	37.0
lookong for job	3.8	4.8
waiting for farm season	18.2	35.0
Non-active	24.1	21.3
Unknown	1.8	1.8
Total	100.0	100.0

Source : 1990 Population and Housing Census, Preliminary Report

Table 9 Average Monthly Income by Region

(in baht)

Region	Total	Municipal Area	Sanitary District	Villages
		(in 1981)		
Whole Kingdom	3,378	5,805	3,386	2,680
Central	3,665	5,384	3,770	3,411
Northeast	2,512	5,573	3,264	2,289
North	2,886	5,885	3,176	2,571
South	3,256	6,255	3,275	2,783
		(in 1986)		
Whole Kingdom	3,631	6,654	4,018	2,679
Central	4,006	6,620	4,894	3,443
Northeast	2,555	6,795	3,721	2,165
North	3,106	6,590	3,156	2,718
South	3,657	6,621	4,219	3,011
		(in 1988)		
Whole Kingdom	4,106	6,305	4,290	3,093
Central	4,220	61,245	4,744	3,800
Northeast	3,067	5,587	4,612	2,733
North	3,400	6,589	3,467	3,057
South	3,959	6,951	4,635	3,288
		(Comparison with national level)		
		(in 1981)		
Whole Kingdom	100	100	100	100
Central	108	93	111	127
Northeast	74	96	96	85
North	85	101	94	96
South	96	108	97	104
		(in 1986)		
Whole Kingdom	100	100	100	100
Central	110	99	122	129
Northeast	70	102	93	81
North	86	99	79	101
South	101	100	105	112
		(in 1989)		
Whole Kingdom	100	100	100	100
Central	103	971	111	123
Northeast	75	89	108	88
North	83	105	81	99
South	96	110	108	106

Source : Statistical Yearbook of Thailand, 1990

Table 10 Incidence of Poverty

(Unit : %)

Area	1975/76	1980/81	1985/86	1988	1990
Nation					
Villages	36.2	27.3	35.8	26.1	22.1
sanitary districts	14.8	13.5	18.6	14.6	13.3
municipal areas	12.5	7.5	5.9	11.1	10.9
all	30.0	23.0	29.5	21.1	18.0
Northeast					
Villages	48.5	37.9	50.5	33.9	29.1
sanutary districts	24.7	20.8	33.3	19.2	18.5
municipal areas	20.9	18.0	18.7	20.9	19.0
all	44.9	35.9	48.2	32.2	27.7

Source :

Thailand's Income Distribution and Poverty Profile and Their Current Situations by Thailand Development Research Institute, December 1988

Table 11 Number of Household Surveyed by Sources of Drinking Water and Other Uses

Source	Nation	Northeast
		(drinking water)
Tap water inside	2,095	223
Tap water outside	349	56
Public well	2,089	1,275
private well	2,866	521
Rain water	3,749	1,807
River, canal, stream, waterfall	297	44
bottled drinking	635	59
others	74	14
unknown	72	21
TOTAL	12,225	4,020
		(%)
Tap water inside	17.1	5.5
Tap water outside	2.9	1.4
Public well	17.1	31.7
private well	23.4	13.0
Rain water	30.7	44.9
River, canal, stream, waterfall	2.4	1.1
bottled drinking	5.2	1.5
others	0.6	0.3
unknown	0.6	0.5
TOTAL	100.0	100.0
		(other uses)
Tap water inside	3,152	478
Tap water outside	476	93
Public well	3,163	2,047
private well	3,963	1,020
Rain water	206	62
River, canal, stream, waterfall	1,181	294
others	46	13
unknown	38	13
TOTAL	12,224	4,020
		(%)
Tap water inside	25.8	11.9
Tap water outside	3.9	2.3
Public well	25.9	50.9
private well	32.4	25.4
Rain water	1.7	1.5
River, canal, stream, waterfall	9.7	7.3
others	0.4	0.3
unknown	0.3	0.3
TOTAL	100.0	100.0

Source : Advanced Report 1990 Population and Housing Census by National Statistical Office

Table 12 Number of Household by Toilet Type

(in thousand)

Toilet Facility	Nation	Northeast
Flush	753	155
exclusive	672	132
shared	81	23
Moulded Bucket Latrine	9,529	2,962
exclusive	9,104	2,850
shared	425	112
Flush and moulded Bucket Latrine	198	31
exclusive	168	25
shared	30	7
Pits or others	235	29
None	1,459	822
Unknown	51	21
TOTAL	**12,224**	**4,020**
	(%)	
Flush	6.2	3.9
exclusive	5.5	3.3
shared	0.7	0.6
Moulded Bucket Latrine	77.9	73.7
exclusive	74.5	70.9
shared	3.5	2.8
Flush and moulded Bucket Latrine	1.6	0.8
exclusive	1.4	0.6
shared	0.2	0.2
Pits or others	1.9	0.7
None	11.9	20.5
Unknown	0.4	0.5
TOTAL	**100.0**	**100.0**

Source : Advanced Report 1990 Population and Housing Census by National Statistical Office

Table 13 Number of Household with Selected Durable Household Appliances

Household Appliance	Nation	Northeast
Radio	9,951	3,068
Color TV	5,633	1,055
Black/white TV	2,997	1,098
Video	1,493	149
Iron	6,689	1,455
Electric rice cooker	7,418	1,499
Electric fan	8,893	2,461
Sewing machine	2,209	560
Vacuum cleaner	458	45
Refregirator	4,478	706
Washing machine	702	64
Air-conditioner	420	31
Telephone	974	105
Bycicle	7,117	2,704
Motor cycle	4,977	1,133
Motor car	1,404	216
Motor Boat	158	20
Water pump (agriculture use)	1,547	333
Ploughing macvhine	1,225	339
Local farm truck	343	81
TOTAL	**12,224**	**4,020**
	(%)	
Radio	81.4	76.3
Color TV	46.1	26.2
Black/white TV	24.5	27.3
Video	12.2	3.7
Iron	54.7	36.2
Electric rice cooker	60.7	37.3
Electric fan	72.8	61.2
Sewing machine	18.1	13.9
Vacuum cleaner	3.7	1.1
Refregirator	36.6	17.6
Washing machine	5.7	1.6
Air-conditioner	3.4	0.8
Telephone	8.0	2.6
Bycicle	58.2	67.2
Motor cycle	40.7	28.2
Motor car	11.5	5.4
Motor Boat	1.3	0.5
Water pump (agriculture use)	12.7	8.3
Ploughing machine	10.0	8.4
Local farm truck	2.8	2.0

Source : Advanced Report 1990 Population and Housing Census by National Statistical Office

PART II

EDUCATION AND SKILL DEVELOPMENT

Final Report
Sector Report : Part II Education and Skill Development

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CHAPTER 1

PRESENT CONDITION OF EDUCATION AND SKILL DEVELOPMENT

1.1 Education in Thailand

1.1.1 The Educational system in Thailand

According to the 1977 National Scheme of Education, the educational system in Thailand can be classified into formal education and non-formal education. The formal education is provided on a continuous and regular basis in permanent education establishments with certain curriculum, subject matters, teaching and learning arrangements and time schedule. The objective of the formal education is to help students acquire and develop academic and vocational knowledge needed for becoming a member of the society. The non-formal education is provided on a more ad hoc basis in addition to the formal education. The non-formal education aims at providing people with additional opportunities for basic ability training, especially for those lacking the formal education training, and vocational and skill training in response to individual needs and interests.

The formal education is divided into four stages : pre-primary education, primary education, secondary education and higher education. Average school ages for these stages by type of education is shown in Figure 1.1.

Pre-primary education

Pre-primary education is provided for children of 3 to 5 years of age with the aim of giving preparatory training for primary education. Private kindergartens provide 3-year programs, whereas public schools include 2-year kindergartens and 1-year small children classes.

Primary education

Primary education is 6 years and compulsory. It aims at helping students to acquire basic knowledge, literacy and mathematical ability to build a foundation for occupations and become a good citizen under a democratic monarchy.[1)]

Secondary education

Secondary education is divided into lower secondary education and upper secondary education, each for three years. The objective at this level is to help students acquire knowledge and vocational skills suited to their age, needs, interest and aptitude. Students are expected to be able to comprehend and know how to choose an occupation beneficial for himself/herself and the society. General education programs are provided both at lower secondary and upper secondary levels, while vocational training programs start at the upper secondary level.

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1) Report on Educational Statistics by Changwat: Academic Year 1990, Office of the Permanent Secretary, Ministry of Education

Higher education

Higher education refers to education above the upper secondary education for a length of 2 to 6 years or more. Educational programs at this level provide both general education and vocational education at colleges and universities. The objectives include the following:

- to help young people develop intellectual and academic capacibilities,
- to create manpower at higher academic and vocational levels for the development of the country, and
- to instill young people with morals, ethics, and knowledge and appreciation of arts and culture to enable them to live a life valuable to others, society and ultimately to the nation.

1.1.2 Related government offices

A number of government offices are involved with providing educational services in various fields in Thailand as summarized below.

(1) Ministry of Education

Formal Education system

- Office of National Primary Education (primary schools)
- Department of General Education (secondary schools)
- Office of the Private Education Commission (private schools from pre-primary level to secondary school level)
- Department of Teacher Education (teacher colleges and primary and secondary schools for demonstration purpose)
- Department of Vocational Education (agriculture colleges, technical colleges, vocational colleges)
- The Fine Arts Department (college of dramatic arts and college of fine arts)
- Rajamangala Institute of Technology
- Department of Physical Education (physical education college)

Non-Formal Education system

- Department of Non-Formal Education (non-formal education centers)
- Office of the Private Education Commission (non-formal education schools, specially scheduled schools, tutorial schools, correspondence schools, arts schools, vocational trade schools, special schools for disabled).
- Department of Religious Affairs (pre-primary schools)
- Department of Vocational Education (non-formal skill training courses)

(2) Ministry of University Affairs

- national universities
- private universities
- demonstration schools from pre-primary to secondary school level for demonstration purpose

(3) Ministry of Interior

- municipal primary schools
- non-formal education programs

(4) Ministry of Public Health

- nursing colleges

(5) Ministry of Transport and Communications

- the Post and Telecommunication school
- school for railway

(6) Ministry of Defence

- Armed Forces Academy and its preparatory school

(7) Bangkok Metropolitan Administration

- municipal primary schools
- non-formal schools for vocational training

1.2 Educational Resources and Enrollment in Thailand

1.2.1 Educational resources in Thailand

Number of schools

The number of all schools in Thailand was 37,718 in 1990. This was an increase of 0.3% from 1986 (37,616). Schools under the Ministry of Education (MOE) accounts for most of the schools as shown below.

Jurisdiction	No. of School in 1990	
Ministry of Education	36,409	(96.5%)
Other offices	1,309	(3.5%)
Total	37,718	(100.0%)

The number of schools per 100,000 population was 69, which was about 30% higher than that of Japan with 53 schools per 100,000 population in 1989.

In terms of the distribution of public schools (excluding private schools) under MOE by level, primary schools under the jurisdiction of the Office of the National Primary Education Commission was dominant as shown below.

Primary School	:	31,349	(93.6%)
General Secondary School	:	1,846	(5.5%)
Vocational School	:	193	(0.6%)
Teacher Education	:	59	(0.2%)
Others	:	28	(0.1%)
Total	:	33,475	(100.0%)

The dominance of primary school in Thailand is sharply contrasted with the situation in Japan, as an example of industrialized countries. In Japan primary school accounted for only 38%, while secondary schools shared 26% of all the schools. The dominance of primary schools in Thailand is a reflection of the fact that while most children attend primary schools, the rate of continuation to the secondary school is extremely low in Thailand. This would be an important issue to be tackled in planning development of educational resources in Thailand.

Of all the 37,718 schools in Thailand, 34,784 schools or 92% were public, those administered by various ministries such as MOE, Ministry of University Affairs and Ministry of Interior. The remaining 2,934 were privately operated.

Of all the schools, 54 schools were under the jurisdiction of Ministry of University Affairs as of 1990. They can be broken down into 13 demonstration schools, 14 state institutes for higher education and 27 private institutes for higher education. The number of state institutes for higher education increased to 17 by 1992, which include the following universities : Chulalongkorn, Kasetsart, Khon Kaen, Chiang Mai, Thammasat, Mahidol, Ramkhamkaeng, Silapakorn, Sukhothai Thammathirat, Prince of Songkla, Sri Nakharinwirot, King Monkut's Institute of Technology (Thonburi), King Monkut's Institute of Technology (Lat Krabang), National Institute of Development Administration, Institute of Agriculture Technology and Ubon Ratchathani.

Number of Teachers

As shown in Table 1.1, the total number of teachers was 570,830 in 1990, which is equivalent to 1,047 teachers per 100,000 population. This level was 24% lower than that of Japan (1,340 per 100,000 population in 1989). During the 4-year period between 1986 and 1990, the number of teachers increased by 1.8%, a higher rate than the increase of schools.

The following shows a distribution of teachers by educational attainment in the two years, a good indicator of the quality of teachers.

(Unit : %)

	1986	1990
Master's degree or higher	1.6	2.3
Bachelor's degree	55.0	65.6
Diploma	29.8	21.0
Lower than diploma	13.6	8.9
Other	-	2.2
Total	100.0	100.0

Teachers with master's degree or higher and bachelor's degree have increased substantially, while teachers with diploma or lower degrees have decreased accordingly. This is a favorable trend showing an improvement in the academic quality of teachers.

A comparison of teachers at public schools and private schools shows that teachers at public schools are more highly educated than those at private schools as shown in the following table.

(Unit : %)

	Public Schools	Private Schools
Master's degree or higher	2.5	1.2
Bachelor's degree	68.3	45.5
Diploma	20.1	27.7
Lower than diploma	8.5	12.1
Other	0.6	13.7
Total	100.0	100.0

A number of factors can be conceived for explaining larger share of less educated teachers at private schools. They would include under-payment of salary, often at a rate lower than the legal minimum wage, less favorable work condition and lower social status of private school teachers. These factors combined would drive away qualified teachers and attract less educated teachers to private schools.

1.2.2 School enrollment in Thailand

The number of all the students in Thailand was 10,900,052 in 1990 as shown in Table 1.2, which is equivalent to 19,988 per 100,000 population or one out of five people. This level was comparable to Japan's case, which showed 21,718 students per 100,000 population or one student out of 4.6 people. Although lower ratio of students at secondary schools and above in Thailand would lead to lower number of all students per population compared with Japan, above figures showed otherwise. This fact would be attributed to different age structure in the two countries: a larger share of younger people in Thailand than in Japan.

Over the four years from 1986 to 1990, the number of students in Thailand increased by 1.7%, which was a similar rate to that of the number of teachers. Students at pre-primary level, lower secondary level and higher education level showed a sharp increase ranging from 9.1% to 28.1%.

Table 1.3 shows the number of students by level and type of education. A prominent feature is relatively high share of students receiving vocational educations, 44% of all the upper secondary level students and 33% of all the higher education level students.

One of the problems often pointed out about education in Thailand is low enrollment ratio at secondary school level. The following are the gross enrollment ratios (number of students divided by total number of population in the corresponding age group) at each school level in 1987 and 1990.

(Unit : %)

	1987	1990	Change
Pre-primary school	31.1	36.0	+4.9
Primary school	94.6	93.8	-0.8
Secondary school	28.2	29.9	+1.5
(Lower secondary school)	(32.6)	(37.2)	(+4.6)
(Upper secondary school)	(24.2)	(22.5)	(-1.7)
Higher education school	7.5	8.1	+0.6
Total	45.7	46.6	+0.9

Primary school enrollment is quite high, though a small decline in the ratio was observed over the three years. All the other schools, pre-primary schools, secondary schools, and higher education schools saw a rise in the enrollment ratio.

The gross enrollment ratio at secondary school in Thailand is compared with those of other Asian countries as follows.

Thailand (1990)	:	30%
South Korea (1988)	:	87%
Singapore (1985)	:	69%
Hong Kong (1985)	:	74%
Indonesia (1985)	:	48%
Malaysia (1988)	:	57%
Philippines (1988)	:	71%

This comparison shows a striking lag of Thailand behind other Asian countries. The Thailand's ratio is even lower than such countries as Indonesia and the Philippines whose per capita GDP are significantly lower than that of Thailand. Increase in the enrollment ratio at secondary school level would be one of the important issues to be tackled in coming decades.

Some statistics on job and skill training, an important aspect with regard to economic development are looked into. It was reported that there were altogether 500,106 students receiving vocational training courses under Ministry of Education in 1990. The following shows a breakdown.

	Number	%
Industrial Technology	215,829	43.2
Business & Commercial Technology	232,537	46.5
Arts & Crafts Technology	14,822	3.0
Home Economics	17,071	3.4
Agricultural Trade	15,548	2.9
Dramatic Arts	4,299	1.0
Total	500,106	100.0

Of 215,829 students studying industrial technology, 166,625 or 77% were upper secondary level vocational school students and the rest at higher education level. Public schools play a more important role, providing programs to 142,510 students or 66% of all the students in this category, while the remaining students were studying at private schools.

1.3 Educational Resources and School Enrollment in the Study Area

(1) Share in Thailand

The total numbers of schools, teachers and students in the Study Area are compared with those of Thailand for 1990 as follows.

	Study Area	Thailand	Share %
Schools	7,238	37,718	19.2
Teachers	93,324	570,830	16.3
Students	1,932,643	10,900,052	17.7

Compared with the share of Study Area's population to the national population which was 18.2% in 1990, share in the number of schools was higher indicating the government's effort for equitable distribution of educational facilities. The number of teachers, on the contrary, is lower in share. This implies the fact that despite government's efforts it is more difficult to recruit teachers in the Study Area where rural characteristics is stronger than more urbanized areas. Share of the number of students at 17.7% is almost identical to that of population. Table 1.4 presents a breakdown of the numbers of schools, teachers and students in the Study Area by province and department and ministry. In terms of the level and type of the school, primary schools and secondary schools combined accounted for most of the schools in the Study Area in the number of schools, teachers and students as follows.

	Elementary School (%)	Secondary School (%)	Total (%)
Schools	91.8	4.2	96.0
Teachers	77.6	14.3	91.9
Students	80.1	12.5	92.6

(2) Primary education

Both in terms of the availability of educational resources and enrollment at primary education level, the Study Area's condition is better than that of the nation as shown below.

	Study Area	Thailand	(%)
Number of Primary Schools*	6,645	31,349	21.2
Number of Teachers	72,390	338,020	21.4
Number of Students	1,548,872	6,676,562	23.2

* Those under the office of the National Primary Education Commission

The same tendency can be observed also from the number of schools, teachers and students per population shown in Table 1.5 and summarized below.

Number of Primary Schools, Teachers and Students per 100,000 Population

	Study Area	Thailand	Difference(%)
Schools	67	57	+18%
Teachers	731	620	+18%
Students	15,631	12,243	+28%

Two factors can be conceived that would explain the higher level of enrollment at primary school in the Study Area : higher accessibility to primary level education, a result of the government effort on equitable provision of primary education as shown in larger number of schools and teachers per population and higher proportion of younger people in the total population in the Study Area.

In terms of an area covered by one primary school, the Study Area's average was 13 km^2 per school, which is equivalent to a 2 km radius circle, while the national average was 16 km^2 equivalent to 2.3 km radius circle (Table 1.6). On average, it can be said

that primary schools are located within an easily accessible distance mostly on foot or sometimes by public transport system, both in the Study Area and Thailand. Variations among the provinces in the Study Area are not so great ranging between the least 11 km^2 per school (1.9 km radius) in Yasothon and the greatest 18 km^2 per school (2.4 km radius) in Mukdahan.

Regarding the number of primary schools per administrative unit, there are 42 primary schools in a district (amphoe) and 5 primary schools in a sub-district (tambon). Average populations of amphoe and tambon are 62,000 and 8,100 respectively.

(3) Secondary education

In contrast with the favorable condition of elementary school education, secondary school education in the Study Area lags behind the national condition in terms of availability of educational opportunities and enrollment. The following are the shares of the numbers of secondary schools, teachers and students of the Study Area to the nation.

	Study Area	Thailand	Share (%)
Secondary Schools	303	1,846	16.4
Teachers	13,324	98,969	13.5
Students	242,260	1,672,289	14.5

The number of secondary schools in the Study Area accounted for 16.4%, which is lower than the population share of 18.2%, but not too significantly. The share of the number of teachers is nearly 5% lower than the population share indicating the difficulty in recruiting and assigning teachers to rural areas. The number of students shows also a lower share. Difference in enrollment rate would be larger than this, considering higher proportion of younger people in the population in the Study Area.

The same trend can be observed by the number of secondary schools, teachers and students per 100,000 population as shown in Table 1.5 and summarized as follows.

Number of Secondary Schools, Teachers and Students per 100,000 Population

	(a) Study Area	(b) Thailand	Difference (a)/(b)(%)
Secondary Schools	3	3	100
Teachers	134	181	74
Students	2,445	3,066	80

Density of secondary schools shows a surprising fact. An area covered by one secondary school is 294 km^2 on average in the Study Area, while that for Thailand was 278 km^2 in 1990 as shown in Table 1.6. Assuming a secondary school is located in the center of a 294 km^2 circle, the maximum distance, equivalent to the circle's radius, would be about 10 km. This is beyond the walking distance for children. Since this is an average figure, it would be reasonable to assume longer distances for rural areas and shorter distances for urban areas. Also the figure will be higher, if the calculation is made for lower secondary schools only excluding upper secondary

schools (estimated to be about 440 km^2/school or 12 km radius). As pointed out often, limited access to secondary education, especially in rural areas, is one of the most serious problems to be tackled.

In terms of the number of secondary schools per administrative unit, there are 1.9 secondary schools in a district (amphoe) and 0.25 secondary school per sub-district (tambon). In other words, almost 2 secondary schools are shared by an average of 62,000 population in a district and 75% or 3 out of 4 sub-districts have no secondary school.

Another important indicator is the transition rate from primary school to secondary school. Table 1.7 presents the transition rates in the Study Area and Thailand in 1991 and the following is a summary.

Nakhon Nayok	:	70%
Prachin Buri	:	57%
Nakhon Ratchasima	:	51%
Buri Ram	:	40%
Surin	:	43%
Si Sa Ket	:	46%
Ubon Ratchathani	:	38%
Yasothon	:	47%
Mukdahan	:	64%
Study Area (total)	:	46%
Thailand	:	61%
(Bangkok)	:	(103%)
(Other areas in Thailand)	:	(57%)

The Study Area's transition rate in 1991 at 46% was lower by 15% than the national average and by 11% than that of the areas outside Bangkok. Among the nine provinces, Nakhon Nayok and Mukdahan were higher than the national average at 70% and 64% respectively. All the other seven provinces showed rates lower than the national level. The Bangkok's figure at 103%, a rate higher than 100%, would be conceivable due to inflow of some children from the areas outside Bangkok to enter secondary schools, probably prestigious ones, in Bangkok.

Behind the average figures, a wide variation is observed in the transition rate among districts in each province. As shown in Table 1.7, in all provinces except Yasothon, differential between the highest district and lowest district in transition rate is more than 2. In Nakhon Ratchasima and Ubon Ratchathani, the differentials are especially high at 4.5 and 4.3 respectively. These wide variations among districts imply an imbalance in secondary education availability and a disparity in income level between urban and rural areas. Urban population have better access to secondary schools resulting in higher transition rate, while rural areas, especially remote areas, are distant from secondary schools leading to lower transition rates, in some places as low as 15% or 18% (Nakhon Ratchasima). In the process of envisaged development according to the scenario of the present master plan which assumes a leading role of Muang Nakhon Ratchasima and Muang Ubon Ratchathani, maintaining balance in providing secondary educational opportunities for rural areas, especially in these two provinces, would be of prime importance.

The average transition rate in the Study Area, though lower than the national average, has been improving recently (Table 1.8). The rate was only 32% in 1989, but grew to 36% in 1990 and 46% in 1991. This trend is observed in all nine provinces in the Study Area, as a good sign of improvement. Change in disparity between urban and rural areas, however, needs further attention.

(4) Higher education

Higher education here refers to universities and colleges under Ministry of University Affairs and teacher colleges under Department of Teacher Education, Ministry of Education.

In Thailand, distribution of universities and colleges is characterized by an extreme concentration in Bangkok Metropolis as shown below.

	Bangkok Metropolis	Thailand	Share (%)
Number of institutes	31	54	57
Number of teachers	12,631	18,433	69
Number of students	164,784	216,832	68

In the Study Area, there was only one college as of 1990, that is Wongchawalitkul College in Nakhon Ratchasima. It is a private college offering courses in engineering, commerce and law. The numbers of teachers and students were 80 and 622 respectively in 1990.

Opportunity for higher education is extremely low in the Study Area compared with Bangkok Metropolis and even areas outside Bangkok Metropolis. Table 1.9 compares the number of institutes, teachers and students per 100,000 population in the Study Area, Thailand, Bangkok Metropolis and areas outside Bangkok Metropolis. The levels relative to Thailand and areas outside Bangkok Metropolis are extremely low as summarized below.

Study Area's level in Number of Institutes, Teachers and Students, per 100,000 Population as % of Thailand and Areas Outside Bangkok Metropolis

	Relative to Thailand(%)	Relative to areas outside Bangkok Metropolis(%)
Number of institutes	10	20
Number of teachers	2	7
Number of students	2	4

The situation, however, has been improving recently. There are two new universities in the Study Area recently established : Suranaree University of Technology in Nakhon Ratchasima and Ubon Ratchathani University in Ubon Ratchathani.

The Suranaree University of Technology (SUT) is a challenging project to tackle the problem of shortage in engineers and natural science experts in Thailand. Construction of the campus in a 1,100 ha (7,000 rai) area in southwestern part of Nakhon Ratchasima City has been completed recently and the university will start operation in 1993. The enrollment in the first year is planned to be about 1,000. The total number of students will expand to about 6,000-8,000 by the end of the century.

The number of faculty will be about 600 at the full operation stage. Courses in the following fields are to be provided.

Undergraduate level

(a) Social Technology
- general education
- social sciences
- language
- business administration
- political science

(b) Basic Science
- physics
- chemistry
- biology
- mathematics

Graduate level

(a) School of Agriculture Technology
- plant production technology
- animal production technology
- bio-technology
- agriculture engineering
- food technology
- genetic engineering
- product development technology

(b) School of Industrial Technology
- mechanical engineering
- electrical engineering
- electronic engineering
- instrumentation engineering
- industrial engineering
- production engineering
- computer technology
- packaging technology
- telecommunications technology
- transportation technology
- bio-medical engineering
- printing technology

(c) School of Resource, Energy and Environment
- chemical engineering
- environmental engineering
- polymer and rubber products technology
- ceramic technology
- geological technology
- fiber, textile and paper technology
- metal technology
- mining engineering
- petro-chemical engineering

- energy technology

A unique characteristic of the Suranaree University of Technology is the introduction of a new system that allows a high degree of autonomy. Under the new system, SUT is provided with a lump-sum fund from the government and is allowed to decide on its own the usage of the fund. This is a departure from the beaurocratic system applied to most state universities in Thailand. A number of benefits such as follows can be gained from the new system.

- Salary scale of faculty can be determined at a level competitive with the private sector, therefore minimizing brain-drain.

- Closer cooperation with the private sector becomes possible in such ways as sharing of laboratories and facilities, exchange of personnel, cooperation in curriculum preparation and so forth.

- Self-financial management might enable better financial performance by managing its own personnel and other resources.

- Expansion of the program can be more easily planned and implemented such as joint programs with overseas institutes (e.g. Canadian universities already planned) and receiving trainees from the neighboring countries such as Indonesia, Burma, Bangladesh and Indochina countries.

Ubon Ratchathani University, the other new higher-education institute in the Study Area, is planned to send out its first graduates in 1993. The university was established in 1987 as a Ubon Ratchathani campus of Khon Kaen University in 1987 and has recently been upgraded to an independent university. As part of national policy, natural sciences are emphasized in speciality and curriculum preparation. It offers courses in engineering and agriculture at present. In the near future natural sciences such as physics, chemistry and biology will be added. By 1996 it plans to expand the scale to have about 3,000 students in total.

Regarding the teacher education, there were altogether 5 teacher colleges in the Study Area, 1 each in Nakhon Ratchasima, Buri Ram and Ubon Ratchathani and 2 in Surin, having 697 teachers and 7,518 students in total. Nakhon Nayok, Prachin Buri, Si Sa Ket, Mukdahan and Yasothon had no teacher college as of 1990 (Table 1.4). These respectively accounted for 8.5%, 10.9% and 11.1% of the total figures in Thailand, all lower than the population share of 18.2%. In terms of their numbers per 100,000 population, their levels are lower than those of Thailand and even those of areas outside Bangkok Metropolis as below (Table 1.9).

Study Area's Level in the Number of Teacher College, Teachers and Students per 100,000 Population as % of Those of Thailand and Areas Outside Bangkok Metropolis

	As % of Thailand	As % of areas outside Bangkok Metropolis
Number of teacher colleges	45%	50%
Number of teachers	60%	69%
Number of students	61%	71%

A key factor in expanding the educational opportunities for the Study Area's population, especially through increasing secondary schools in rural areas, is provision of teachers. It would be necessary to enhance the capacity of teacher colleges in the Study Area through establishing teacher colleges in 5 provinces where there is no teacher college at present and expanding the existing teacher colleges in the remaining 4 provinces.

(5) Vocational education

Vocational trainings are provided by a number of departments and ministries in Thailand such as Department of Vocational Education (Ministry of Education or MOE), Rajamangala Institute of Technology (MOE), the Department of Skill Development (Ministry of Interior or MOI) and private schools which are supervised by the Office of the Private Education Commission (MOE). In the following part, vocational trainings provided by the Department of Vocational Education (DOVE) are described mainly and a case of a job training center established in Ubon Ratchathani by the Department of Skill Development is briefly presented.

As of 1990, DOVE had 163 schools, 15,040 teachers and 218,599 students nationwide. An interview survey with DOVE revealed that all the institutes under DOVE have been upgraded to colleges by December 1992 with the total number of 221 including 11 under construction. Respective figures for the Study Area were 17 institutes, 1,676 teachers and 22,454 students, equivalent to 10.4%, 11.1% and 10.3% of Thailand, all lower than the population share of 18.2%. The number of schools, teachers and students per 100,000 population in the Study Area are compared with those of Thailand as follows.

(Unit : per 100,000 population)

	(1) Study Area	(2) Thailand	(1)/(2) %
Number of schools	0.2	0.3	67
Number of teachers	17	28	61
Number of students	227	401	57

Institutes under DOVE provide various types of education in various fields such as follows.

1) Type (Refer to Figure 1.1):

Formal education

- Certificate in Vocational Education or Cert.Voc. (grade 10-12 or equivalent to upper-secondary level)
- Diploma in Vocational Education or Dip.Voc. (a two-year program for those having Cert. Voc.)
- Diploma in Technical Education or Dip.Tec. (a two-year program for upper-secondary school graduates)
- Higher Diploma in Technical Education or High Dip.Tec. (a two-year program for Dip.Voc. holder or equivalent)

Non-formal education

- Certificate of Vocational Education (1-year program for those completing lower-secondary education, offered by Polytechnic Colleges)

- Short-Course Programs (225-hour course for those having primary school education or more)
- Cooperative Study Training (to provide vocational trainings for general secondary school students)
- Agriculture Short Course Training (7 to 8-day training for farmers)
- Mobile extension unit (mobile occupational training for farmers and farming communities, started in 1983, lasting about 3 days)

2) Major fields covered:

(a) Trade and industry:

auto mechanics, machine shop, welding and sheet metal, electricity, electronics, building and construction, production technology, ship building

(b) Home economics and arts and crafts:

general home economics, food and nutrition, clothing and textile, arts and crafts

(c) Agriculture:

plant science, animal husbandry, farm mechanics, farm management

(d) Business education:

accounting, secretarial science, marketing, banking and finance, hotel management

(e) Technical education:

surveying, architectural drawing, mechanical drawing, civil technology, electricity, electronics, mining engineering, petro-chemical, production technology

(f) Agriculture:

agri-business, ago-industry

Educational programs under the types and fields mentioned above are provided by colleges such as technical colleges, vocational colleges, commercial colleges, arts and crafts colleges, business administration colleges, polytechnic colleges, industrial and community education colleges, and agricultural colleges.

Table 1.10 presents the number of classrooms and students by type of education for Educational Region 11 and Thailand. Educational Region 11 includes Nakhon Ratchasima, Buri Ram, Surin, Si Sa Ket and Chaiyaphum and is used as proxy to the Study Area. The table shows that the population in Region 11 relies more on non-formal programs than on formal programs. All the four types of formal-education programs accounted for proportion much lower than the population share of Region 11 (13.4%). Looking at non-formal programs, average participation in terms of the number of students was high (average 15.7%) despite lower availability of

educational opportunity in terms of the number of classrooms (average share of 10.7%).

Especially agricultural short course, mobile educational programs and 225-hour training courses are participated at higher rates. This would be a reflection of stronger rural characteristics of the Study Area and lower income levels that makes participation in non-formal programs easier than attending formal education programs.

Ubon Ratchathani Institute for Skill Development (UBISD) was established by Department of Skill Development, Ministry of Interior with the financial and technical cooperation of the Japanese government. It provides 10-month training programs and 2-month on-the-job training at factories for young people of 16 to 25 years of age. UBISD is sending out about 1,700 trainees every year.

Training is provided in the following fields.

Skill development (for non-experienced trainees)

- machine processing and welding
- auto mechanics
- agricultural machinery
- automobile repair
- electricity
- electronics
- freezing and air-conditioning
- furniture
- coating
- plumbing
- ceramics
- construction supervision assistance

Skill improvement (for trainees with work experience)

- machinery (design, measurement, lathing, welding)
- automobile maintenance (motorcycle repair, engine maintenance, agricultural small engines, automobile electricity, transmission)
- electricity/electronics (transistor repair, white-black TV, wiring, electric motor maintenance)
- architecture (architectural design, plumbing, cost estimate, ceramics painting)

Mobile training

- small engine maintenance, motorcycle repair, electric appliance repair

Special training

- supervisor training, guard training, quality controller, boiler, waiters training

(6) Non-formal education

All over Thailand as well as in the Study Area, non-formal education programs play an important role in providing educational opportunities to young people and adults

who seek education aside from or in addition to formal-education programs. In terms of non-formal education's position relative to other types of programs, it ranked 4th in the number of students following primary school, secondary school and private school in the Study Area as follows.

	Number of Students (10^3)
Primary school	1,548
Secondary school	242
Private school	77
Non-formal education	58
Vocational school	22
Teacher school	8

There are a variety of programs provided by the non-formal education system including general education type programs such as illiteracy improvement and courses equivalent to elementary school up to upper secondary school levels as well as vocational training type programs in industrial training, home economics, business and agriculture.

Statistics on non-formal education show a lower level of educational resources and enrollment in the Study Area relative to Thailand. Table 1.11 shows this characteristics. The Study Area's shares in the number of teaching staff, classrooms and students to those of Thailand were 8.6%, 12.3% and 12.5% respectively, lower than the population share of 18.2%. With respect to shares by type of education, vocational type education programs are alloted more resources and serving higher share of students. Distribution of classrooms and students by type of vocational training in the Study Area was as follows.

	Classroom	Student
Industrial training	18.2%	16.9%
Home economics	53.3%	53.4%
Business	5.8%	6.4%
Agriculture	14.8%	14.4%
Others	7.9%	8.9%
Total	100.0%	100.0%

1.4 Problems in Education and Skill Development

The problems in education and skill development in Thailand and the Study Area are presented in this section based on the analysis on the present condition in the preceding section. A fundamental problem structure is presented in Figure 1.2.

Primary education

There seems to be no major problem in terms of educational resources, both in Thailand and the Study Area. The gross enrollment ratio in Thailand was high reaching 92.2% in 1989. Availability of resources, the number of schools and teachers per 100,000 population in the Study Area exceeded that of Thailand as explained in section 1.3. Enrollment in terms of the number of students per 100,000 population was also high enough in the Study Area to override the higher

proportion of children. Drop-out, however, has some room for improvement. Cohort survival rates between grade 1 and grade 6 in Thailand was 83% in the 1985-1989 period, which was higher than the Asian average of 62%, but lower than those in Korea and Malaysia reaching almost 100%. The rates for Educational Region 10 [1] and 11 [2] were 88% and 76% respectively. Drop-outs are seen in the early grades of primary education.

Problem seems to lie more in terms of quality of education. A TDRI Study [3] points out that variations in quality of education at primary school level are observed among regions. The study cites an example of average scores of six graders in two subjects in 1985 to 1988 in selected regions which showed the following variations.

Region	Thai Language	Mathematics
Bangkok	66.2	54.1
Region 2 [4]	51.6	36.5
Region 11	57.7	41.3

These variations in students' performance conceivably stem from two factors:

- availability of instructional materials such as textbooks and workbooks, and
- level of specialization of teachers.

At present, expenses for instructional materials are borne by parents in stead of by schools. This naturally results in a lower level of availability of teaching materials in lower-income areas such as the Study Area. The second factor is related with balance between the type of teachers available and those actually needed. The case is that schools in urban areas or in Bangkok area have wider choices in selecting teachers, therefore able to assign a teacher with certain speciality to a post matched to him or her. In rural areas areas where supply of teachers is limited, on the contrary, a realistic way to cover all required subjects would be for teachers to cover various fields including those not necessarily in their own speciality, leading to lower quality of teaching provided.

Secondary education

Problems at secondary education are two-fold, in quantity and quality.

The low level of enrollment at secondary school is more of a national issue, not only of the Study Area alone. It is reported by the TDRI Study that the present gross enrollment ratio (as of 1991) is less than half of that in Korea when Korea's GDP per capita was at the present level in Thailand or less than half of that of Sri Lanka whose present per capita income is about a third of Thailand's. The following three factors are pointed as the factors behind low enrollment at secondary school level

---

1) Educational Region 10 :
Ubon Ratchathani, Yasothon, Mukdahan, Roi Et, Kalasin, Nakhon Phanom, Mahasarakham

2) Educational Region 11 :
Nakhon Ratchasima, Buri Ram, Surin, Si Sa Ket, Chaiyaphum

3) "Education Options for the Future of Thailand", Volume 1, 1992, the Thailand Development Research Institute

4) Educational Region 2 :
Yala, Pattani, Narathiwat, Satun

during an interview survey with the Department of General Education, Ministry of Education.

- low income level
- low awareness of parents toward the value of secondary education
- limited access to secondary schools

The first two factors are major, while the third is minor according to the Department of General Education. The first factor is unarguable. People with lower income are more likely to depend on their secondary school age children as workforce rather than sending them to secondary schools. There are different views regarding the second factor. For example it was pointed out by the Thai consultant who carried out the socio-economic survey for the study that awareness of farmers is surprisingly high toward job choice, development of the region, education etc. With regard to the third factor, a brief analysis was made in Section 1.3 regarding access to secondary schools. It was found that a secondary school covers an average area of 294 km^2, equivalent to a circle with 10 km. radius. Though this is not the only constraint hindering the improvement in secondary school enrollment, this factor would not be a negligible one and is worth an equal level of focus with the other two factors.

Higher-education

Higher-education has problems both in quantity and quality. As clarified in Section 1.3, there are only 3 universities (5.4% of all the universities in Thailand), 2 public and 1 private, in the Study Area for a population of 9,909 thousand (18.2%). Seven out of nine provinces except Nakhon Ratchasima and Ubon Ratchathani have no universities or colleges. This will be a constraint in the future in promoting economic development of the Study Area. Problem in quality is related with the administration system governing state universities. All state universities, except Suranaree University of Technology and Warairak University, are bound by an act common for all government offices. This system is so bureaucratic that various new activities have to go through the official procedure imposing constraints on activities of universities and colleges. This kind of bureaucratic system is not suited to higher-education institutes that require a high level of flexibility to pursue a variety of educational and research activities.

Another problem is brain drain of faculty to the private sector. This problem is more serious for teacher college teaching staff than for universities and colleges. Despite various measures by the government such as improvement in fringe benefits and welfare conditions, the trend has not been reversed in the recent boom of the Thai economy.

Vocational/non-formal education

A number of problems were cited by an interview with Department of Vocational Education and Department of Non-Formal Education such as follows.

Brain drain of teaching staff : Teachers, especially those in 30-35 years old range, are attracted to private business and universities. Various efforts by the government to keep them through measures such as improvement of fringe benefits, increased financial assistance in purchasing house, increased opportunities for further study do not seem to be working enough.

Budgetary constraint : Limit in fund availability poses a constraint in purchasing new equipment for vocational training. This makes the institutes difficult to teach up-to-date advanced techniques to students.

Insufficient teacher training capacity : Both vocational colleges and non-formal education centers have a problem of limited teacher training capacity. In case of vocational colleges, Department of Vocational Education (DOVE) is coping with this problem by establishing its own teacher training center, Katumwan Technical College, and cooperating with existing universities such King Monkut Institute of Technology and Mahidol University. In case of non-formal education, Department of Non-Formal Education operates 5 regional teacher training centers all over the country (in Ubon Ratchathani in the Northeast) and recently opened a new national training center in Pak Chong, Nakhon Ratchasima. Existing universities or teacher colleges have been inactive in providing training for non-formal education teaching staff.

CHAPTER 2

SEVENTH FIVE-YEAR DEVELOPMENT PLAN

2.1 Development Targets

The government set forth the following targets for the 7th Five-year Plan.

(a) Expansion of basic education

- from present 6 years to 9 years
- the rate of transition from primary to secondary level : present 46.2 % to 73.0 %

(b) Ratio of science to social speciality at university entrance

" 30 : 70 " by 1996

(c) Encouragement of wide and continuous access to formal and non-formal education

2.2 Guidelines and Measures

The government stipulates the following guidelines and measures.

(1) Place high priority on expansion of basic education

(a) Promote child development from birth to the age of compulsory education through strengthening pre-school education and child and infant care

(b) Ensure that the six-year compulsory education cover all of the age group

- appropriate teaching and learning pattern for underpreviledged children in remote rural area and urban slums etc.
- improve teaching and learning process to reduce repetition and drop-out rates
- school lunch project with higher efficiency
- laws and rules to be amended to allow for greater flexibility

(c) Expand basic education from six to nine years, both quantitative and qualitative

- incentives to underpreviledged parents (e.g. subsidy, educational vouchers)
- curriculum to be improved (more skill and occupational development, apply folk wisdom to teaching)

(d) Develop methods and principles of teaching science, mathematics and linguistics

- teachers training to be speeded up and pre-service and in-service training to be provided
- school equipment, laboratories, libraries to be improved and modernized

(2) Develop medium and high skill manpower in quality and quantity

(a) Speed up production of medical doctors, dentists, pharmacists, engineers, architects, scientists, technologists, and technicians

(b) Develop an information system with up-to-date data on labour market situation to improve curriculum and teaching and learning process consistent with employment opportunities

(c) Speed up development and training of teachers in shortage areas

- training of teachers in existing institutions with foreign assistance
- coordination with enterprises in skill training
- encourage rotation of personnel among various educational institutions
- incentives to teachers in shortage areas (e.g. engineering, science, medicine, dentistry, pharmacy) : scholarships, subsidies (bonus income), increase pay, extend retirement age to 65

(d) Encourage public higher education institution to have greater independence and self-reliance

- allow universities to allocate budget freely except in personnel administration
- seek own income source : Suranaree University of Technology (partly subsidized, rest own income)

(e) Promote provision of higher education

- interdisciplinary curriculum to be developed
- technical cooperation program with foreign institutions

(f) Adjust level of fee per course unit, and tuition fee of public higher education institutions

(g) Encourage higher education institutions to carry out extensive research and development

(3) Encourage and support a greater private sector role in providing education and training services

(a) Liberalize the education sector

- remove tuition ceilings
- higher flexibly in curriculum preparation for private schools

- promotional status to private sector investment in education
- private sector to be encouraged to produce more engineers, medical doctors, dentists with government support

(4) Improve provision of life-long education

(a) Decentralize decision making power in setting direction and policy to regions and local authorities

(b) Provide linkages between the formal and non-formal school systems

- efficiency of teaching and learning method to be improved in moral and ethical values, sports activities, respect for discipline, appreciation of beauty etc.
- quality of life to be improved through integrating local folk knowledge and modern technology

(c) Encourage children both within and outside the system to have access to education and to have opportunities to sit in public examinations to determine their educational qualifications and to have public accreditation in consistency with their ages and levels of education

- more opportunities for self-education
- adult education provision to be speeded up
- flexibility in education period (e.g. shorter period for excellent students)

(d) Improve quality of primary and secondary school teachers

(e) Develop an information system for dissemination of news, information and knowledge

CHAPTER 3

OBJECTIVES, STRATEGY AND MEASURES

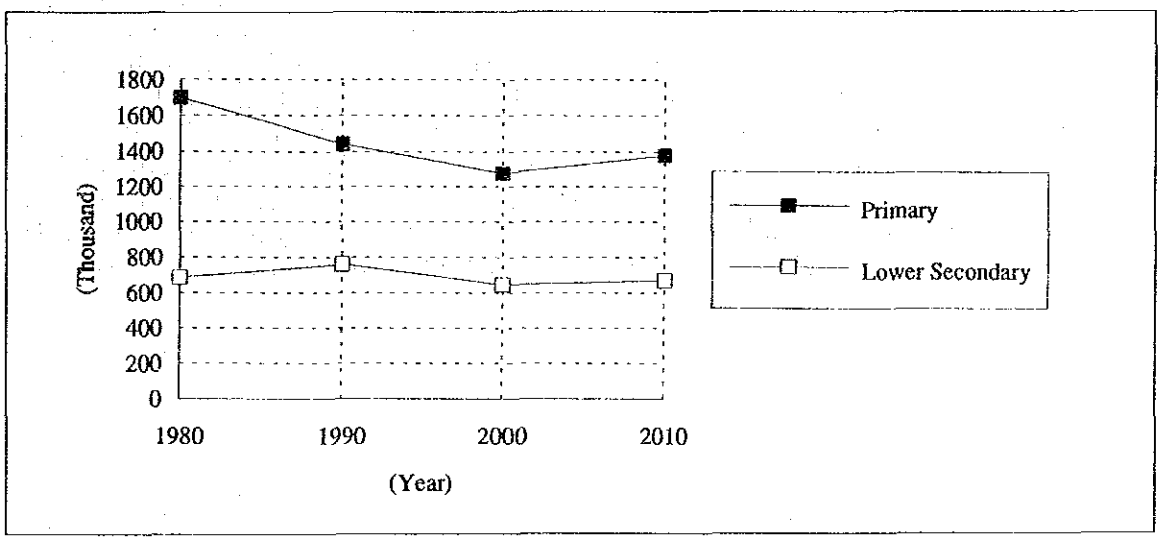
3.1 Impacts of Socio-Economic Change on Educational Resources Planning

3.1.1 Change in population age structure

It is expected that aging of Study Area's population will occur in the following decades in accordance with a further decline in fertility rate as will be so in other parts of the country. This phenomenon is likely to result in lower ratios of primary and secondary school age population, which would affect the planning of primary and secondary school expansion program. The following table and diagram summarize ratios and the numbers of primary school and lower secondary school age population in the Study Area in 1980, 1990, 2000 and 2010 estimated based on a report prepared by NESDB.[1)]

Year	Primary School Age Population		Lower Secondary School Age Population	
	% to Total Population	in 10^3	% to Total Population	in 10^3
1980	21.0	1,696	8.5	686
1990	14.2	1,442	7.5	761
2000	11.2	1,278	5.6	645
2010	10.3	1,380	5.0	670

Primary and Lower Secondary School Age Population



1) "Population Projections for Thailand 1980-2015" by Human Resources Planning Division, National Economic and Social Development Board, June 1991

Both proportions of primary school and lower secondary school age population have been declining since 1980 due to falling fertility rate by active government effort on family planning. They will keep falling until the year 2010. Population size in terms of number is affected both by the proportion of school age population and the level of total population growth. In both cases of primary school and lower secondary school age population, the numbers will decline between 1990 and 2000, but rise in the subsequent 10-year period until 2010. This change in trend is a reflection of higher level of fertility rate decline in 1990 - 2000 period (1990 : 2.60 to 2000 : 2.3) [1] overriding the effect of overall population growth and lower rate of fertility decline between 2000 to 2010 (2000 : 2.03 to 2010 : 1.90) overridden by overall population growth impact. The 2000 - 2010 period will see an increase in overall population caused by expanded employment opportunities generated in the Study Area.

This finding gives an important insight into an appropriate allocation of educational resources in the following decades. The following are the directions to be pursued.

(1) Until 2001, educational resources at primary school level should be diverted to cover lower secondary school education and pre-primary school education to effectively cope with a decline in primary school age population as has already been started under the Office of the National Primary Education Commissions's initiative. Emphasis in adding lower secondary school education element to existing primary schools should be laid on rural areas where establishment of new lower secondary schools is costly, whereas new lower secondary schools should be set up from relatively large communities. Pre-primary school education is effective in raising awareness of parents on the value of education. Training programs should be provided to teachers to upgrade their teaching skill needed for lower secondary school and pre-primary school education.

(2) Between 2001 and 2010 in which the number of primary and lower secondary school age population begin to restore to 1990 level, educational resources diverted in the previous period should partly be rediverted back to primary school education. The level of teachers' teaching ability should have been significantly improved by this period through receiving trainings and accumulating experiences in teaching higher level students in the earlier period. Expansion of lower secondary education program in this period can effectively capitalize on the experience of the 1990 - 2000 period, for example, in ensuring smoother exchange of personnel between primary and lower secondary schools, improving curriculum to be more consistent with each other, raising parents' awareness on the importance of continuing education etc.

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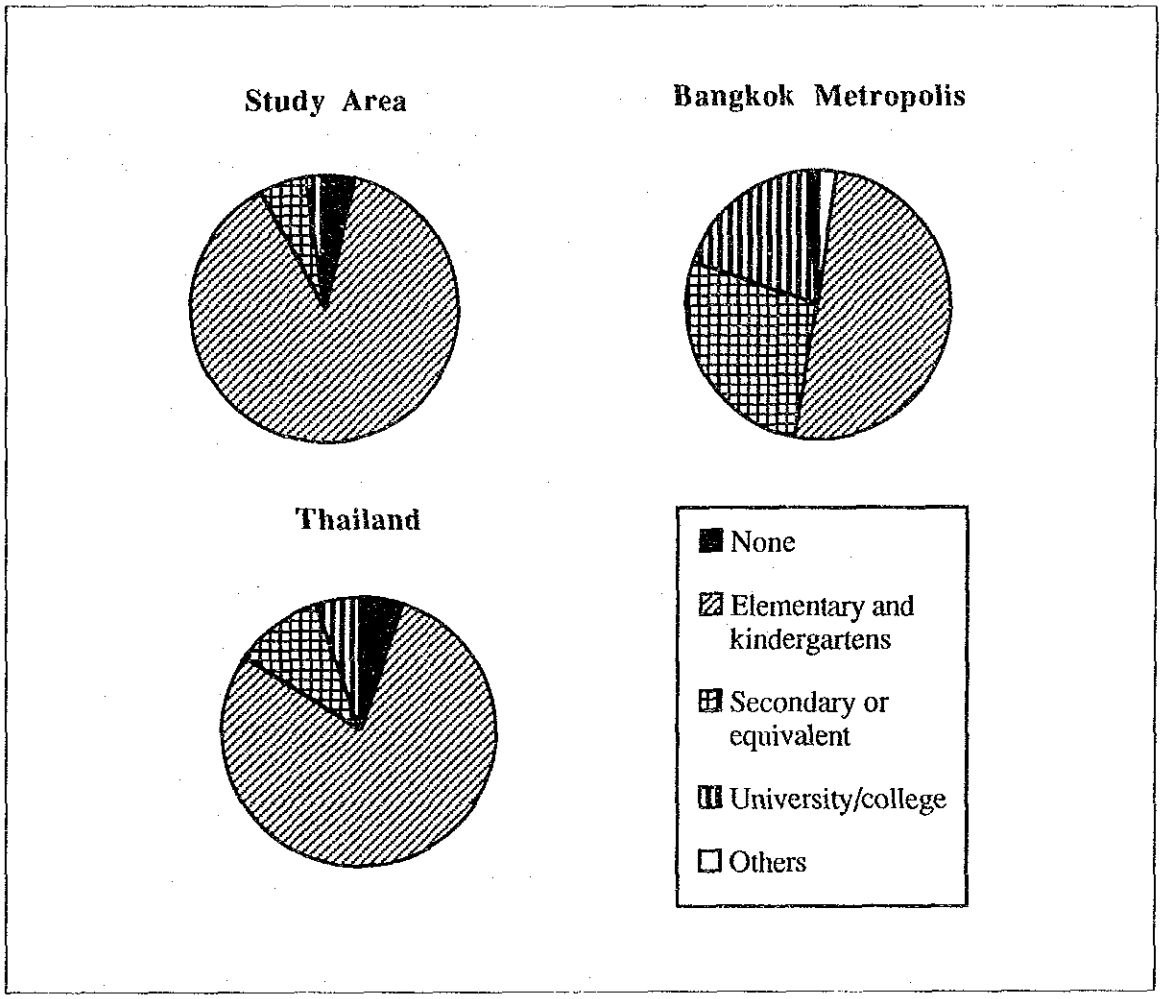
1) Total fertility rate is defined as the ratio of the number of births in a year per 1,000 population.

3.1.2 Educational attainment of labor force

Educational attainment of labor force and productivity are highly related. The higher the education level, the higher the productivity. The following charts compare educational attainment of the existing labor force in the Study Area, Thailand and Bangkok Metropolis in 1989 as taken from Table 3.1.



The following summarizes the findings.

(1) Labor force of the Study Area and Thailand is characterized by a high proportion of those with only primary school education (88% and 79% respectively).

(2) Labor force in Bangkok Metropolis is, on the contrary, characterized by a lower share of those with only primary education (50%) and larger shares of those with higher education (secondary 27%, university/college 19%)

A simple analysis was carried out to estimate the level of change in composition of Study Area's labor force in terms of educational attainment under certain assumptions. The analysis followed the procedure below.

(a) Estimate of total labor force in 2001 and 2010

(b) Estimate of the number of labor force to retire in the 1990-2001 period and 2001-2010 period respectively

(c) Estimate of the total number of new labor force to enter into labor market in respective period disaggregated into groups by educational attainment under certain assumptions

Target for the 1990-2001 period was assumed such that the composition of new labor force be same as the present composition in Bangkok Metropolis in 1990 and it will further improve in the subsequent nine-year period. Assumed targets for the Study Area are as follows.

Assumptions for New Graduates

(Unit : %)

Level	1990-2001 Period	2001-2010 Period
None	2.0	0.0
Only primary	50.0	40.0
Up to lower secondary	13.0	20.0
Up to upper secondary	6.0	10.0
University/College	17.0	25.0
Others	12.0	5.0

(d) Conversion of (c) into average annual requirements for new graduates from respective level of education and comparison with the existing capacity

(e) Estimate of composition of the labor force by educational attainment in 2001 and 2010

The tables below show a summary of the findings. Table 3.2 presents a process of the calculation.

Comparison of Existing Capacity and Average Annual Requirement in terms of the Number of Students

(Unit : 10^3)

Level	Existing Capacity	1990-2001 Period		2001-2010 Period	
		Annual Requirement	Balance	Annual Requirement	Balance
None	-	-	-	-	-
Primary	258	95	163	118	147
Lower secondary	55	45	10	71	(16)
Upper secondary	26	28	(2)	45	(19)
University/College	10[1)]	18	(8)	31	(21)
Other	-	-	-	-	-

% Composition of Labor Force by Educational Attainment

(Unit : %)

Level	1990	2001	2010
None	3.9	3.5	2.8
Primary only	88.1	80.5	72.3
Up to lower secondary	3.6	5.5	8.4
Up to upper secondary	2.2	3.0	4.4
University/College	2.1	5.1	9.1
Others	0.1	2.5	3.0
Total	100.0	100.0	100.0

The findings can be summarized as follows.

(a) The present capacity of primary schools is more than sufficient to meet demands through 20-year period.

(b) Under the applied assumptions, the present capacity of lower secondary school will be able to meet demand until 2001, while demand exceeds the capacity beyond 2001. The upper secondary school's capacity falls short of demand in both periods.

(c) The capacity of higher education institutes, university and college, falls short of requirement by a large margin.

1) Annual graduates : SUT (1,500), Ubon Ratchathani University (1,000), Teacher College (1,800), Rajamangala Institute of Technology (850), Technical Colleges (4,500)

(d) Overall composition of the labor force in educational level shows a gradual improvement. In all levels except the ratio of primary school, the Study Area in 2001 will be supplied with larger proportions of higher education labor force than Thailand in 1990. The level of Bangkok Metropolis in 1990, however, will not be reached even in 2010.

Some policy implications clarified by this analysis are the following.

(a) The second finding above about lower secondary school was based on the target that 13% of new labor force to enter market will have lower secondary education. Existing government target regarding secondary education is set in a different way : in terms of transition rate from primary school to lower secondary school to be raised from present 46% to 73% by 1996. Converting this target into annual demand, a different picture is drawn as follows.

- 73% of transition rate is about idential to gross enrollment ratio of 73% assuming most children go to primary school.
- 73% gross enrollment ratio at lower secondary level in 2001, for example, is equivalent to 157,000 entrants into lower secondary school annually in 2001.
- In this case, the present capacity of about 55,000 students per year at lower secondary school is far short of requirement in 2001. The capacity should be expanded by three to four times by 2001.

Expansion of lower secondary school should be pursued, as mentioned in sub-section 3.1.1, by converting primary school resources to lower secondary school and establishing new schools starting from relatively large communities.

(b) Shortage of higher education institutes is obvious. From the finding, about 8 additional institutes by 2001 and 21 additional institutes by 2010 will have to be established, assuming 1,000 students per grade, to meet the target for 2001 and 2010 respectively : supplying 17% and 25% of new labor force to enter into labor market by graduates from universities, teacher colleges and various technical colleges.

The government has been aware of the situation and making effort in setting up new institutes such as follows.

1992 - Technical College in Surin and Nakhon Ratchasima by the Department of Vocational Education (DOVE)
- Suranaree University of Technology by the Ministry of University Affairs

1993 - Technical College in Buri Ram and Yasothon by DOVE

1993~1996 - Technical College in Si Sa Ket by DOVE

An effective approach to tackle shortage of higher education institutes problem will be to establish or covert an existing university in the Study Area into an open university such as Ramkhamhaeng University or Sukhothai Thammathirat University.

These two open universities had total students numbering 343 x 10^3 and 76 x 10^3 respectively in 1989. Once an open university of similar scale is set up, shortage of higher education capacity will be significantly solved. A promising location for a new open university would be Ubon Ratchathani capitalizing on the existing Ubon Ratchathani University and planned "Teleport" development. Existing educational resources of Ubon Ratchathani University can be expanded and effectively deployed to provide various educational programs taking advantage of advanced telecommunication and audio-visual techniques becoming applicable by Teleport development.

3.2 Objectives and Targets

The ultimate goal of education and skill development is to help people developing various capabilities to live a life that is active, enlightened and economically better off. With better education, people are able to comprehend the conditions of the society better and are in a better position to play an active role in decision-making and development process. Enhanced vocational skill enables people to seek better-paid jobs and more secured life.

Based on the analysis of the present condition, government policies and ultimate goal of education and skill development, the objectives of education and skill development are specified as follows:

(1) to expand opportunities for basic education for building analytical and judgement capabilities of the population,

(2) to reinforce the higher education and research and development programs with greater emphasis on science and technology field,

(3) to expand opportunities for life-long education for the improvement of basic abilities for those who lack formal-education and require it on top of formal education programs,

(4) to expand opportunities for vocational training, both in formal and non-formal systems,

(5) to enhance the role of private education, and

(6) to play an active role in preventing and minimizing social problems associated with rapid economic development.

The targets for development in education and skill development for the Study Area are established as follows for the quantifiable items for each stage.

<u>Phase I : 7th Five-Year Plan Period (- 1996)</u>

- Basic education to be extended from 6 years to 9 years.
- Transition from primary school to lower secondary school to rise from present 46% to 73% (for the Study Area and Thailand).
- Average coverage of a lower secondary school will decline from present 440 km^2 (radius of 12 km) per school to 260 km^2 (radius of 9.1 km) per school, which is equivalent to an addition of 124 more lower-secondary schools or equivalent by 1996.

- About 5,000 more teachers in net should be generated during this period to meet expanded demand at lower secondary school assuming 800 students per a lower secondary school and teacher - students ratio of 1:20.
- Two major higher-education institutes start operation (Suranaree University of Technology and Ubon Ratchathani University). Another higher-education institute starts to be planned.
- The number of vocational institutes and teachers under DOVE per 100,000 population in the Study Area will become closer to that of Thailand by adding five more new vocational institutes.
- The number of teachers and classrooms per population in non-formal education programs under Department of Non-Formal Education (DONFE) will rise to the national average level, that is equivalent to a 112% increase in the number of teachers and a 48% increase in the number of classrooms.

Phase II : 8th Five-Year Plan Period (- 2001)

- Transition rate from primary school to lower secondary school will reach 100%.
- Average coverage of a lower secondary school will rise to one school per 200 km^2 (radius of 8.0 km) per school, which is equivalent to an addition of 103 new lower secondary schools or equivalent during this period.
- An addition of 4,100 lower secondary school level teachers will be required.
- The third higher-education institute will be established and start operation in the Study Area.
- Schools and teachers under DOVE and DONFE will be expanded at a rate higher than that of Thailand.

Phase III (- 2010)

- Transition rate from primary school to lower secondary school will be maintained at 100%.
- Average coverage of a lower secondary school will rise to one school per 134 km^2 (6.5 km radius), the level at which 1 lower secondary school caters for graduates from 10 primary schools. This increase is equivalent to an addition of 220 more lower secondary schools or equivalent in 10 years. On average, the number of lower secondary schools or equivalent to be added every year is 22 through the 1990-2010 period.
- About 8,800 additional lower secondary school level teachers will be needed.
- By the end of this period, all the provincial capitals will have at least one university or college. During the period between 2001 and 2010, five more institutes will be established.

3.3 Strategy

3.3.1 Overall strategy

The following are the overall strategy.

(1) Formal education and non-formal education

It would be realistic to assume that it will take years before various expansion programs in formal education system bear fruits. This is so because it will involve individual families as well as government for expanded programs to become truly accessible to regional population. With improved income,

expanded educational programs become affordable and more accessible to them. Government effort in expanding educational opportunities is certainly an important necessary condition, but it should be accompanied by upgraded income on the part of individual families for the government target to be realized. In this regard, expanding formal education system is a long-term strategy.

More short-term strategy would be upgrading skill levels of existing labor force through various non-formal education programs such as skill development programs provided by Department of Non Formal Education, Department of Vocational Education (Ministry of Education) and Department of Skill Development (Ministry of Interior). This short-term strategy is complementary with the long-term strategy in the expansion of formal education system in that improved skill level of parents results in better income that makes it more affordable for them to send their children to school for longer years.

(2) Efficient utilization of existing resources

A flexible approach should be taken to tackle manpower shortage problem. Existing resources should be utilized most efficiently in maintaining expansion programs of educational system within a certain budgetary framework. The overall educational system should allow for flexibility in exchanging teaching personnel and sharing buildings and equipment among different levels and type of schools and institutes. Examples of this approach are as follows.

- diversion of educational resources among primary school and secondary school

- sharing of equipment for skill development among Ministry of Interior institutes and Department of Vocational Education colleges

- diversion of teaching staff among different schools such as secondary school, university/colleges and non-formal education centers

(3) Stronger initiative of provincial government

An important objective of enhancing educational system in the Study Area is to strengthen programs matched to local needs. This is true from primary school level all the way up to university and college level. Needs for skill development, for example, differ from region to region reflecting different socio-economic conditions and peoples' aspirations. At present, various types of education are provided by a number of departments and ministries. This fact tends to result in educational programs developed according to central offices' policies rather than based on local needs. The function of provincial governments with municipalities and districts/sub-districts under its supervision should be strengthened so as to modify educational programs to be geared more toward local needs, while maintaining an appropriate balance with common subjects proposed by central offices.

(4) Stronger government - private cooperation

Two types of benefits are envisaged by stronger cooperation between government agencies and private sector, especially for vocational education and training : preparation of curriculum matched to needs by private sector and reduced burden on public sector for starting new programs with financial or in-kind cooperation from the private sector. An example of this approach is Choonhavan Technology Training Center opened in 1991 in Nakhon Ratchasima. The center was established by a cooperative mechanism of private organizations and Rajamangala Institute of Technology : land, building and equipment were provided by private companies and teaching staff are provided partly by Rajamangala Institute of Technology.

Other types of cooperation can also be pursued such as exchange of teaching personnel between public institutes and private firms under certain conditions, scholarship program for workers at private firms for receiving training at an existing skill training center and so on.

(5) Role of education for social stability

Education should play an important role in preventing and minimizing various social problems that might occur or worsen along with economic development such as family disintegration, crimes and drug addiction. Also education could play an agent role of traditional values and the social norms which are important elements in maintaining social stability. The role of education in these regards should be recognized and appropriate programs be integrated into educational curricula.

3.3.2 Individual strategy

Individual strategy for each level of education is summarized as follows.

Primary school education

Availability of primary school education does not seem to be a problem overall. Various indicators show favorable performance of primary school education in the Study Area such as the number of schools per 100,000 population (67 as opposed to 57 in Thailand), area covered by one elementary school at 13 km^2 or 2 km radius and teacher - student ratio at 1 : 17. Problem in quantity lies rather in supply - demand imbalance in the coming decade : declining number of primary school age population as observed in sub-section 3.1.1. Strategy to cope with this problem would be to allow for flexible diversion of educational resources between primary schools and secondary schools.

In terms of quality, strategy should be to upgrade the level of education so as to reduce gaps with Bangkok and other advanced areas and between urban and rural areas.

Secondary school education

First strategy in secondary school education is to improve access to secondary school education. Improved access here means getting rid of economic, psychological and geographic constraints hindering parents from sending their

children to secondary schools with particular focus on rural areas. Geographical constraint should be reduced by increasing secondary school program through diverting teaching resources of existing primary schools as well as establishing new secondary schools from larger communities.

Second strategy refers to quality of education provided. As is the case for primary schools, variations in the educational level should be lessened through enhanced teacher training, improvement in curriculum and so on.

Higher-education

First strategy at higher education level is to increase the opportunities for higher-education especially in science and technology fields so that personnel with higher-education in these fields can be provided within the Study Area.

Second strategy is to introduce more autonomous system to new institutes to be established that would allow for flexible operation by each institute. The experience of Suranaree University of Technology should be closely watched in this sense.

Third strategy is to improve and upgrade curricula of universities so as to be able to meet various demands arising from students and labor market.

Fourth strategy is to adjust the present financing arrangements to reflect the "ability-to-pay" principle more closely.

Fifth strategy is to augment the capacity of teacher colleges. Teacher colleges can play a complementary role to universities in generating graduates matched to market demand. Secondary school teachers also should be educated in a larger amount to cope with expanding secondary school education.

Vocational training and non-formal education

First strategy is to enhance vocational training and non-formal education resources, schools, classrooms and teachers, at least to the level of Thailand.

Second strategy is to improve curriculum of these programs in the process of enhancing resources. New types of skills and knowledge useful for taking advantage of emerging economic opportunities in the Study Area should be identified and incorporated into curriculum.

Private education

The role of private education should be more highly recognized and a system be established that would allow for growth of private schools on the basis of market mechanism. Once various restrictions are relaxed, private schools can provide higher quality education at higher costs targeting students from richer families, while public schools are geared more toward the general public aiming at uplifting the bottom level of education.

3.4 Measures

Measures needed to realize the objectives are specified as follows.

Primary school education

(a) to reduce drop-out rates, especially in early grades, through improved access to pre-school education, which is an effective opportunity for enlightening parents for the value of education, and increased provision of resource materials for teachers and pupils.

(b) to reduce variations in the level of education provided through:

- improving the availability of teaching materials through provision or lending of materials by school so as to get rid of economic burden on parents, and
- improving work conditions for teachers in rural areas through increased fringe benefits, financial assistance etc.

(c) to improve cost efficiency of primary school education through increasing teacher - students ratio, which was about 21 in the Study Area in 1990, to the extent that learning outcome is not adversely affected. This will create a pool of primary school teachers who can be retrained and diverted to pre-school and secondary education programs.

Secondary school education

(d) to reduce economic, psychological and geographic constraints on the part of parents in an integrated manner through:

- provision of financial assistances to poorer families in such forms as annual allowance for children, opportunity vouchers for excellent children and educational coupons with certain level of flexibility,
- awareness campaign targeting at rural parents on the value of secondary education, and
- increase in the number of secondary schools according to the targets set forth in Section 3.1.

(e) to improve the quality of education through:

- improving curriculum laying more emphasis on local conditions familiar to students,
- improving the quality of teachers both in formal teacher qualification and attitude of teachers (sincerity, devotion, cooperation with local communities etc.), and
- modifying part of curriculum to meet realistic needs of students and parents such as increasing income generating activities.

(f) to enhance teacher training programs for primary school teachers to be converted to secondary school teachers

Higher-education

(g) to increase the opportunities for higher education by establishing new universities and colleges in accordance with the targets set forth in Section 3.1

(h) to allow new higher-education institutes to operate under an autonomous system such as the one experienced by the Suranaree University of Technology to achieve better performance

(i) Diversification of course offerings should be promoted on the basis more of regional needs than national needs. In this sense curricula of new higher institutes or the existing institutes to be expanded in the Study Area should be prepared or improved in due consideration of demands likely to occur along with regional economic development in the fields such as follows.

- agriculture technology
- industrial technology
- planning and engineering technologies for infrastructure systems
- various non-technical fields such as economics, business, international trade and tourism.

The role of private schools should be recognized in promoting diversification of course offerings. They are generally flexible and responsive to market signals. Relaxation of stringent regulations on private university operation, therefore, should be considered.

(j) The "ability-to-pay" principle in public institutes' financial arrangements should be strengthened through raising overall tuition fee level, while significantly expanding scholarship programs targeting at students from lower income families.

(k) to enliven higher-education programs through various measures such as:

- closer coordination between universities and colleges and the private sector in curriculum preparation, personnel exchange, sharing of equipment and so on,
- improvement in counselling and placement services for secondary students selecting fields of study and students entering and graduating universities and colleges,
- allowing higher flexibility in shifting fields after entering university/college.
- allowing higher flexibility in setting fee level and usage of revenue,
- modification of students selection mechanism in favor of early decision on field selection,
- greater freedom in establishing self-financed programs,
- strengthening Ph.D. programs, and
- support of a competitive awards program to stimulate research activities.

Vocational education and non-formal education

(l) to increase the number of vocational institutes and non-formal education centers at least to the national level at the initial stage and later to a higher level.

(m) to take advantage of unique ethnic composition of the Study Area, having populations with Khmer, Vietnam and Laos origins in developing skill training centers. Skill training centers along the border areas in Prachin Buri, Surin and Mukdahan currently planned by the Department of Non-Formal Education can be developed from a simple skill training center for poor and disadvantaged people to a more active cultural and economic promotion center aiming at upgrading the skill of these minority groups in such a direction as to be applicable to strengthening cultural and economic ties with the neighboring Indochina countries.

(n) to develop a system that would capitalize on the initiative of people and organizations directly concerned and needing training programs such as agriculture information exchange programs for farmers and financial assistance program for on-the-job training by private companies.

The following measures, especially, would be pursued for supporting on-the-job training.

- to improve legal and financial environment to encourage private firms to promote apprenticeship programs

- to establish financial support measures such as wage subsidy and lump-sum grant to private firms to encourage setting up job training centers for small to medium scale firms

- to pursue an institutional set-up such as employment contract that would make in-house training by companies more feasible as an effort to overcome high labor mobility in Thailand

(o) to establish a regional "Manpower Information Center" to allow for a smooth exchange of information on manpower requirement and availability among supply side and demand side : universities, vocational colleges/schools, skill training centers, non-formal education centers, private skill training institutes etc. (supply side) and private firms and organizations (demand side). The center will collect, store and release various information on newly or to-be graduates from educational and skill training institutes such as the number of graduates by province, field of study/training, duration of study/training and certificate/degree. The center will also provide placement service for newly/to-be graduates. Ubon Ratchathani would be a favorable location. Planned "Teleport" development in Ubon Ratchathani could incorporate this Manpower Information Center component. The service will be designed to be accessible for potential users in Bangkok area applying advanced telecommunication technology that becomes available by teleport development.

Private education

(p) to establish a system that would allow for a market-oriented operation of private schools through lifting of tuition and fee control on private education to promote the increase of schools of better quality and higher fee, while abolishing subsidy schemes to private schools

(q) Subsidies should instead be provided to parents or students directly in the form of educational voucher rather than channeled through schools. The voucher should be able to be used at any school, private or public, to promote competition and quality improvement.

(r) to promote establishment of new private schools by providing various financial support instruments for particular types of school at some locations strategically important.

3.5 Projects

A number of possible skill development projects were identified based on the analysis on existing condition and potential for regional development in the Study Area, especially in relation with potential and anticipated roles of each sub-region within LNE-UE Regions. It is assumed that expansion of basic education programs be planned within the national educational development context rather than within LNE-UE regional development context, therefore project ideas for basic education program are not considered here.

The following projects were identified.

(a) Thai-Khmer Culture Bridge Project (Appendix I)

- training of Khmer-origin minority population for tourist guide and trade/business firm personnel

(b) Thai-Vietnam Culture Bridge Project

- training of Vietnamese-origin minority population for tourist guide and trade/business firm personnel. A similar concept to (a) above.

(c) Si Sa Ket Agriculture Training Center (Sector Report I "Agriculture")

- provision of a multi-facet and multi-directional opportunity for information exchange on agriculture development among government officers, farmers, researchers, NGOs and school teachers and students.

(d) Korat Skill Training Center (Sector Report II "Industry")

- an existing program implemented by the Department of Skill Development, the Ministry of Interior

(e) Yasothon Aquaculture Training Center (Sector Report I "Agriculture")

- an extension and development of the ongoing UN project called "Communities Fisheries Management in Rural Reservoirs"

(f) Thai-Cambodia Skill Development Center (Sector Report II "Industry")

- a skill training center centering on industrial technologies for Upper East Region population as well as Cambodian population

Tables

Table 1.1 Number of Schools and Teachers by Type of Education in Thailand in 1986 and 1990

Type of Education	Year		Change in :	
	1986	1990	Number	%
		(Number of Schools)		
General Education	36,947	37,054	107	0.3
Vocational Education	581	534	-47	-8.1
Teacher Training Education	53	53	0	0.0
Other Types of Education	-	36	36	-
Under-graduate level of higher education	35	41	6	17.1
Total	37,616	37,718	102	0.3
		(Number of Teachers)		
General Education	509,537	516,649	7,112	1.4
Vocational Education	29,668	28,949	-719	-2.4
Teacher Training Education	6,422	6,948	526	8.2
Other Types of Education	-	909	909	-
Under-graduate level of higher education	15,169	17,375	2,206	14.5
Total	560,796	570,830	10,034	1.8

Source : Report on Educational Statistics by Changwat : Academic Year 1990, Office of the Permanent Secretary, Ministry of Education

Table 1.2 Number of Students in 1986 and 1990 by School Level in Thailand

Level	Year		Change in :	
	1986	1990	Number	%
Pre-primary School	1,009,131	1,292,593	283,462	28.1
Primary School	7,160,494	6,955,492	-205,002	-2.9
Lower Secondary School	1,277,619	1,394,129	116,510	9.1
Upper secondary School	907,231	833,862	-73,369	-8.1
Higher Education Institute	366,305	423,976	57,671	15.7
Total	10,720,780	10,900,052	179,272	1.7

Source : Report on Educational Statistics by Changwat : Academic Year 1990, Office of the Permanent Secretary, Ministry of Education

Table 1.3 Number of Students in 1990 by School Level and Type of Education in Thailand

Level	Total	General Education	Vocational Education	Teacher Training Education	Other type Education	Under-graduate Education
			(Number)			
Pre-primary School	1,292,593	1,292,593	0	0	0	0
Primary School	6,955,492	6,955,492	0	0	0	0
Lower Secondary School	1,394,129	1,391,610	2,413	0	106	0
Upper secondary School	833,862	467,098	364,997	0	1,767	0
Higher Education Institute	423,976	0	140,396	38,501	16,701	228,378
Total	10,900,052	10,106,793	507,806	38,501	18,574	228,378
			(% Distribution)			
Pre-primary School	100.0	100.0	0.0	0.0	0.0	0.0
Primary School	100.0	100.0	0.0	0.0	0.0	0.0
Lower Secondary School	100.0	99.8	0.2	0.0	0.0	0.0
Upper secondary School	100.0	56.0	43.8	0.0	0.2	0.0
Higher Education Institute	100.0	0.0	33.1	9.1	3.9	53.9
Total	100.0	92.7	4.7	0.4	0.2	2.1

Source : Report on Educational Statistics by Changwat : Academic Year 1990, Office of the Permanent Secretary, Ministry of Education

Table 1.4 Number of Schools, Teachers and Students under Various Ministries and Departments in the Study Area in 1990

Department/Ministry	Nakhon Nayok	Prachin Buri	Nakhon Ratchasima	Buri Ram	Surin	Si Sa Ket	Ubon Ratchathani	Mukdahan	Yasothon	Total
Office of the National Primary Education Commission (*)										
Schools	163	688	1,351	833	758	876	1,344	239	393	6,645
Teachers	1,763	7,539	14,635	10,049	8,965	9,669	13,171	2,346	4,253	72,390
Students	29,981	164,302	323,508	218,290	201,080	207,400	279,412	51,518	73,381	1,548,872
Department of General Education(*)										
Schools	9	33	61	36	33	37	56	16	22	303
Teachers	505	1,159	3,289	1,634	1,398	1,414	2,657	508	760	13,324
Students	7,921	22,141	62,892	30,711	27,287	27,983	41,836	9,437	12,052	242,260
Department of Teacher Education(*)										
Schools	0	0	1	1	2	0	1	0	0	5
Teachers	0	0	202	177	148	0	170	0	0	697
Students	0	0	2,579	1,448	1,717	0	1,774	0	0	7,518
Department of Physical Education(*)										
Schools	0	0	0	0	0	1	0	0	0	1
Teachers	0	0	0	0	0	30	0	0	0	30
Students	0	0	0	0	0	291	0	0	0	291
Department of Vocational Education(*)										
Schools	1	2	3	2	2	2	3	0	2	17
Teachers	118	164	313	208	161	241	305	0	166	1,676
Students	1,353	1,986	4,999	2,379	2,875	2,210	4,530	0	2,122	22,454
Rajamangala Institute of Technology(*)										
Schools	0	0	1	0	0	0	0	0	0	1
Teachers	0	0	251	0	0	0	0	0	0	251
Students	0	0	3,397	0	0	0	0	0	0	3,397
Office of the Private Education Commission (*)										
Schools	12	23	74	10	8	15	43	2	9	196
Teachers	163	511	1,440	120	77	260	713	35	103	3,422
Students	3,354	13,738	33,466	2,662	1,245	4,972	14,591	1,038	1,716	76,782
Ministry of University Affairs										
Schools	0	0	1	0	0	0	0	0	0	1
Teachers	0	0	80	0	0	0	0	0	0	80
Students	0	0	622	0	0	0	0	0	0	622
Ministry of Interior										
Schools	3	22	10	3	5	2	15	1	5	66
Teachers	54	227	330	96	91	43	337	6	128	1,312
Students	1,403	5,559	7,125	1,762	1,669	849	7,595	86	2,212	28,260
Ministry of Public Health										
Schools	0	0	1	0	1	0	1	0	0	3
Teachers	0	0	65	0	25	0	52	0	0	142
Students	0	0	1,064	0	415	0	708	0	0	2,187
Total										
Schools	188	768	1,503	885	809	933	1,463	258	431	7,238
Teachers	2,603	9,600	20,605	12,284	10,865	11,657	17,405	2,895	5,410	93,324
Students	44,012	207,726	439,652	257,252	236,288	243,705	350,446	62,079	91,483	1,932,643

Note : (*) All these offices and departments are in the Ministry of Education.

Source : Report on Educational Statistics by Changwat : Academic Year 1990, Office of the Permanent Secretary, Ministry of Education