

## Chapter 12

### **Poverty, Income Inequality and Livelihood Diversification: A case of Asia Highway in Songkhla Province of Thailand**

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Poverty and income inequality is the major concern from the perspective of human wellbeing. Therefore, purpose of this paper is to review the historical status of poverty and income inequality in the Southern Thailand taking account of Asia Highway and its network in the Songkhal province. Descriptive and one way ANOVA method including poverty and income inequality indices were adopted to analyze the household survey data collected in the period of July-November 2010. The average household income is significantly different in accordance with spatial location. Income inequality in the sample survey data is 36.4 percent and inequality is considerably higher in urban area. Incidence of poverty is very low along the Asia highway and its network with head count ratio of 1.17 percent.

## 1. Introduction

### 1.1. Background

Poverty in Thailand was reduced drastically in parallel with economic growth and expansion, from 57 per cent in 1962 to 39, 30 and 13.1 per cent in 1968, 1975 and 1992, respectively (Sinthuvanich & Chuenyong, 1997; Vimolsiri, 1999). “The Thai economy growth was very impressive, except for the short period of economic crisis in 1997-1998, most of the time the economy grew by 6.6% per annum” (Siriprachai, 2009). Therefore, Thailand has been successful to attracting foreign direct investment on account of prudent fiscal and macroeconomic management, low public debts and inflation, friendly business environment and diversification in manufacturing products with higher value-added and expansion into new emerging export market (World Bank, 2012). Thus, Thai economy is rebounded robustly from the global financial crisis of 2009 but it was awfully affected by the floods of 2011. However,

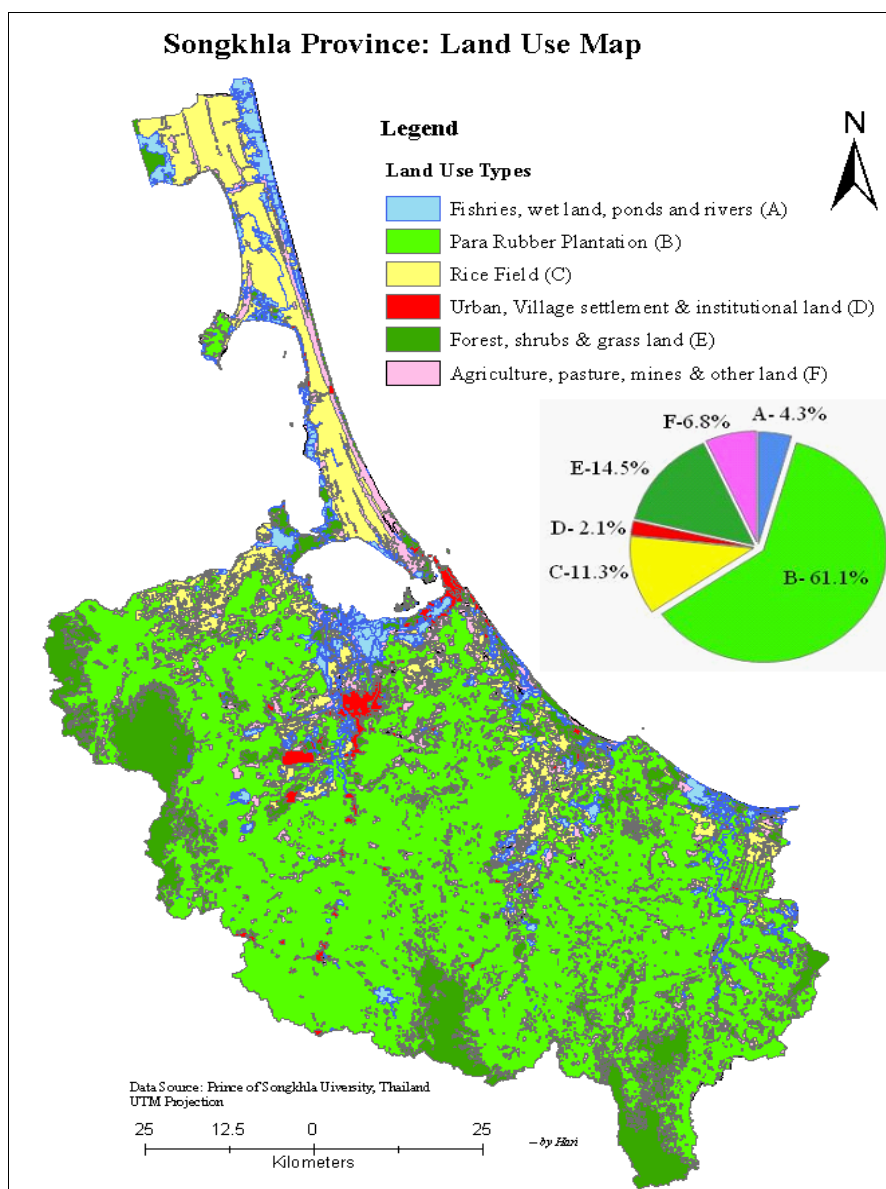
*“...the evidence suggests that the GDP growth rate neither became negative after 1960 nor fell drastically even in the world-wide recession of the early 1980s. Further, the country has embarked on high and sustained growth without severe inflation except during the oil shocks of the 1970s which caused deterioration in its balance of payments and resulted in increased external indebtedness and domestic inflation (Siriprachai, 2009).*

Recently, the Thai economy has shifted from a lower-middle income economy to upper middle economy, because of Thailand’s achievements in the past decades in which the per capita gross national income has almost doubled (US\$ 4,210 in 2010) and poverty has been reduced considerably (World Bank, 2012). Contrarily, instead of having a long period of strong average economic growth, the development pattern of Thailand has left the economy highly exposed to the outside world, and has placed a large proportion of the workforce in the informal sector” (UNDP, 2010). The economic structure of the Thailand still can be considered vulnerable to uncertainty of Thai economy with respect to world economy; because the Thai economy has relied mainly on foreign investment and exports. The financial capital and low wage labor could be constraints for increasing competitiveness and the country is heavily dependent on imported energy. The rate of return for employees in agriculture sector is relatively low and most of the farmers are poor and in debt (Government of Thailand, 2011).

### 1.2. Study Location and purpose of the study

Songkhla province is one of the Thailand's important seaports, located at the coastal belt of the Gulf of Thailand some 950 kilometers south of Bangkok and bordering Kedah State in Northern Malaysia (Gov/Thai PRD, 2004). Additionally, Songkhla province is one of the leading natural rubber growing provinces in the south. Land use patterns show that almost more than 61% of total land covers of the province

is covered by Para rubber plantations followed by Forest resources (14.5%). Altogether, approximately 77 % of land cover is occupied by Agriculture and fisheries (Figure 1)<sup>1</sup>.



**Figure 1. Land use map of Songkhla Province**

The Asian Highway and/or its sub-branches directly or indirectly bind together the various agricultural production patches and agro-based industries of southern peninsular Siam, providing ample opportunities for national and international markets through land shipment. The Hat Yai segment of Asian Highway No 4 (AH2) links the North South Economic Corridor of the greater Mekong sub-region (GMS) with the

<sup>1</sup> The land covers is calculated from the GIS shape file gathered from the Faculty of Environmental Management, Prince of Songkhla University, Hat Yai.

Indonesia-Malaysia-Thailand growth triangle (IMT-GT) sub-region up to the Malaysian border with Thailand at Sadao. Therefore, this Asian Highway No. 4 has a great importance to integrate the economy of Southern Thailand to the East Asian Countries and GMS region. This may enhance product transport through reductions in transport cost; and promote tourism, labor mobility, commercialization of competitive sector and economic globalization (ADB, 2007).

Pisciculture, ocean captures and rubber plantations have been operated for years. These and other natural resource based occupations are the basis of income generation to local dwellers, but they are also a source of income inequality between the poor workers and the rich local and absentee land-owners of the region. We believed that economic and social objectives can only be attained when the rural dwellers of the province begin to attain educational levels, incomes, meaningful employment, and living standards that are comparable to those of the other Provinces. A special emphasis of this paper will therefore to explore the poverty status and the possibilities for bottom-up economic planning to improve the wellbeing of the low income group of the people.

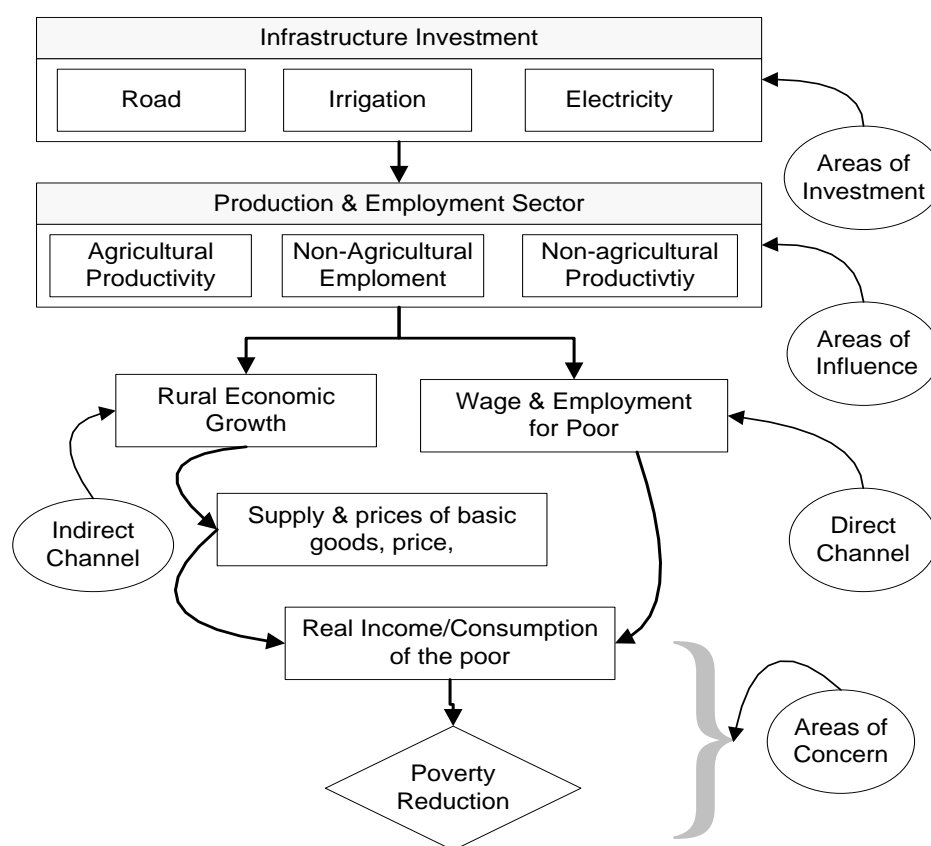
## **2. Review: Road infrastructure and socioeconomic development**

We can argue that the road infrastructure has played a very significant positive role for the economic growth and development performance in the developing countries. Gutierrez et al (2010) argued that “accessibility” is the main ‘product’ of a transport system and is closely related to mobility, economic development, social welfare and environmental impacts. Therefore accessibility can be considered as a proxy for a raft of related (economic, social, environmental) effects of the transport infrastructure (Gutierrez, Condeço-Melhorado, & Martín, 2010). Increased mobility of capital and skilled labor has substantially altered the possibilities of achieving social and economic objectives, allocation incentives and policies designed to promote these objectives may generate unintended distributional shifts as a result of induced factor flows (McCulloch & Yellen, 1997). The economy wide transport effect i.e. social welfare or total welfare consists of the direct and indirect effect in transport market. The former might be consumer surplus and later effect in other markets is changes in unemployment at the regional level (Zhu, Ommeren, & Rietveld, 2009). However, most of empirical findings on the precise impacts of transport infrastructure are inconclusive. Olsson (2009) noted that road projects were not the sole cause of social and economic change in rural Philippines, they did enable trade and investment, increase competition, and release a previously underutilized production potential through access to a larger market area and more attractive purchase prices of production factors (Olsson, 2009)

Contrarily, in developing economies, time savings induced by highway improvements can yield a variety of broader economic effects for example, (i) ensuring market access for producers to stimulate local production; (ii) drawing cheap labor, production inputs, and customers from a larger catchment area, thereby lowering wages and input/output prices; and (iii) altering land prices and development patterns (Gunasekera, 2008). The perception of the role of productive public expenditures as an engine of economic growth has changed markedly over the last few years. Demurger

(2001) followed a growth equation approach and found that differences in geographical location, transport infrastructure, and telecommunication facilities account for a significant part of the observed variation in the growth performances of Chinese provinces. Indeed, the transport variable appears as one of the most regularly differentiating factors in growth gap decomposition. The reliable and affordable infrastructure can reduce poverty and contribute to the achievement of the Millennium Development Goals by providing and supporting the delivery of key services (World Bank, 2004).

Poverty reduction is a primary goal of development policy. However, a considerable segment of the population has to live on meager income with limited access to infrastructure services (Parker, Kirkpatrick, & Figueira-Theodorakopoulou, 2008). In provincial China as well, Fan et al. (2002) showed the effects of different types of government expenditures on growth and rural poverty and argued that roads significantly reduce poverty incidence through increasing agricultural productivity and nonfarm employment (Fan, Zhang, & Zhang, 2002). The summaries how infrastructure investment contributes to the poverty reduction by influencing the productive sectors of the economy and creating employment for poor after the policy interventions are depicted in Figure 3.



**Figure 2. Analytical frameworks describing the links between infrastructure and poverty reduction**

Source: (Ali & Pernia, 2003)

### 3. Research Methods

Analysis of variance (ANOVA-one way), a brief histological review and descriptive approach as well as poverty and income inequality indices were adopted to describe the subject matter.

#### 3.1. Gini Index

The Gini Index is basically used to the represent the income inequality and it measures the ratio of the area between the Lorenz Curve and the equidistribution line to the area of maximum concentration. Let,  $Z$  is the area under the Lorenz curve. Then, the concentration area between the equidistribution line and Lorenz curve is ,

$$\begin{aligned} \text{Concentration area} &= \frac{1}{2} - Z \\ &= \frac{1}{2} - \frac{1}{2} \sum [(q_i + q_{i-1})(p_i - p_{i-1})] \end{aligned} \quad (1)$$

Therefore, Gini ratio is equal to:

$$\begin{aligned} G &= \frac{\frac{1}{2} - \frac{1}{2} \sum [(q_i + q_{i-1})(p_i - p_{i-1})]}{\frac{1}{2}} \\ &= 1 - \sum [(q_i + q_{i-1})(p_i - p_{i-1})] = 1 - 2Z \end{aligned} \quad (2)$$

where,  $q_i$  is cumulative proportion of the income and  $p_i$  is cumulative proportion of the population with  $q_0 = p_0 = 0$  and  $q_n = p_n = 1$ .

Alternatively, Gini Index might be directly calculated from the mean income ( $\hat{y}$ ) of the series and the covariance between income levels, and the cumulative distribution function  $F(y)$  (Bellù, 2006). The formulation is given by,

$$G = \frac{2}{\hat{y}} \text{Cov}(y, F(Y)) \quad (3)$$

or  $\text{Cov}[y, F(Y)] = -\text{Cov}[y, (1 - F(y))]$  , since expected value of both  $F(y)$  and  $[1-F(y)]$  is  $\frac{1}{2}$  ; therefore the expression (1) can be written as:

$$G = -\frac{2}{\hat{y}} \text{Cov}[y, (1 - F(Y))] \quad (4)$$

#### 3.2. Poverty indices

The widely used poverty measure is headcount index, which simply measures the proportion of the population that is counted as poor. Symbolically the headcount index is often denoted by  $P_0$  (Haughton & Khandker, 2009).

$$P_0 = \frac{N_p}{N} \quad (5)$$

where,  $N_p$  is the number of poor and  $N$  is the total population (sample). The equation (5) can be expressed as,

$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i < z) \quad (6)$$

“Here,  $I(\cdot)$  is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if expenditure ( $y_i$ ) is less than the poverty line ( $z$ ), then  $I(\cdot)$  equals 1 and the household would be counted as poor” (Haughton & Khandker, 2009).

## 4. Data

Basically, both household survey and institutional data were used for this study. The field survey was completed in between July, 2010- November, 2010. The survey had covered 7 Tambuns of songkhla province namely, Tha Kham, Khong Hae, Had Yai, Khuang Lang, Phangla and Ko Yo and Boryang. Altogether 275 households were interviewed focusing on their income sources and other household characteristics. The secondary data were retrieved from the Office of the National Economic and Social Development Board, Social and Quality of life data base system.<sup>2</sup> This data was collected by National Statistical Office of Thailand during the periodic Economic and Social Survey of households.

## 5. Results

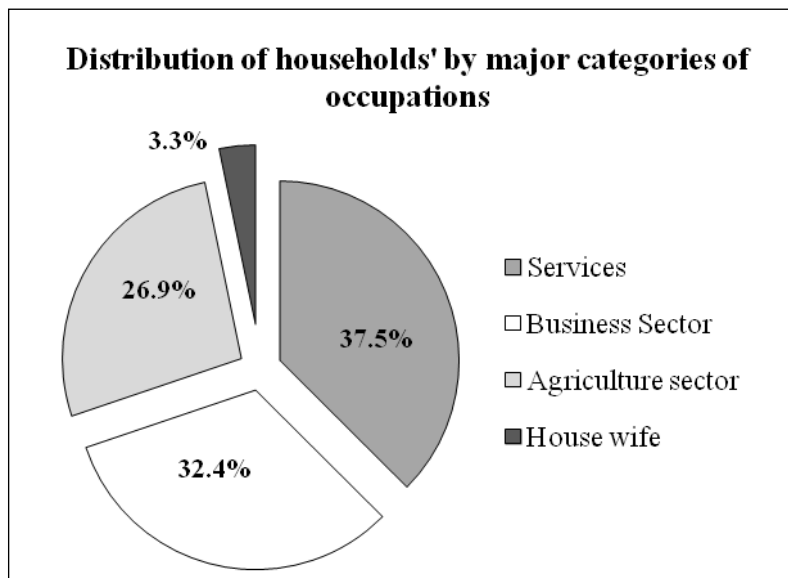
### 5.1. Livelihood strategies adopted in the study site

The livelihood strategies are the dynamic system rather than static unit (Pandit, 2012). Type of livelihood strategies depends on the status of resource endowment that owned by the individual households in a particular situation. Therefore, people choose their livelihood strategies which are feasible with their own resources endowments. Livelihood diversification is general phenomenon or norms and generally, a very few people gather all their income from a single source, and hold all their wealth in the form of any single asset, or use their assets in just one activity (Barrett, Reardon, & Webb, 2001). Diversification of livelihood could simultaneously be changed along with the socioeconomic advancement of the territory. Despite, multiple motives could prompt households and individuals to diversify assets, incomes, and activities especially in the rural areas for instances, the 'push factors: risk management, response to diminishing factors returns, fragmented landholdings, liquidity constraints and high transaction costs' and the pull factors: specialization, induce opportunities due to proximity to market or good marketing environment; to be competitive in the entire market environment and technological advancement (Barrett, Reardon, & Webb, 2001). Alternatively, the livelihood strategies are also guided by coping and adaptive strategy. The former strategies are the short or medium term strategies that anticipate a foreseeable stress or crisis in the immediate future (Niehof, 2004), while later type might be the changes and adjustments that people make in their livelihoods to compensate under the difficult circumstances over time adaptive strategies (Helmore & Singh, 2001). Out of total 275 surveyed households, 55 percent reporting they have multiple sources of income. The survey results showed that more than 37 percent of the households' are engaging in the service sector and followed by business (36%), and agriculture (nearly 27%) respectively (Figure 2).

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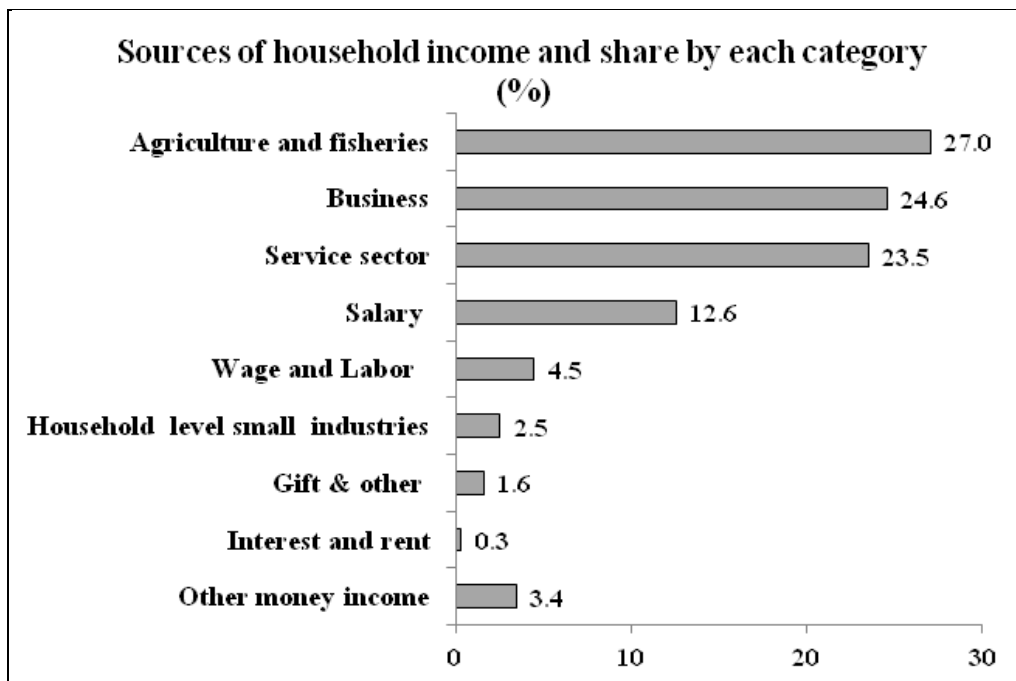
<sup>2</sup> [http://social.nesdb.go.th/SocialStat/StatReport\\_Final.aspx?reportid=205&template=1R1C&yearlytype=M&subcatid=43](http://social.nesdb.go.th/SocialStat/StatReport_Final.aspx?reportid=205&template=1R1C&yearlytype=M&subcatid=43)

Sources of the households' income and shares by each category are depicted in Figure 3. The survey results showed that agriculture constitutes the highest share of households' income (27 percent) followed by business sector (nearly 25 percent) and service sector (nearly 24%) respectively. Equally, the salary comprises nearly 13 percent shares of households' income.



**Figure 3. Distribution of households by major categories of occupation**

Data source: Field Survey conducted in 2010



**Figure 4. Sources of households' income and shares in percentage by each category**



## 5.2. Poverty situation in Thailand: A historical review

Poverty is multifaceted and it is chronic social problem in many developing countries. Reducing poverty and inequality of income distribution (sectoral and regional) are among the most important development policy issues in such countries. Many policy literatures argued that growth in average income is important for poverty reduction and it is generally associated with reduction in the incidence and depth of poverty (Dollar & Kraay, 2002; Ferreira, Leiteb, & Ravallion, 2010). Additionally, the pace of poverty reduction will also depend on the initial level of inequality and changes in the level of inequality (Klasen, 2005; Bourguignon, 2002).

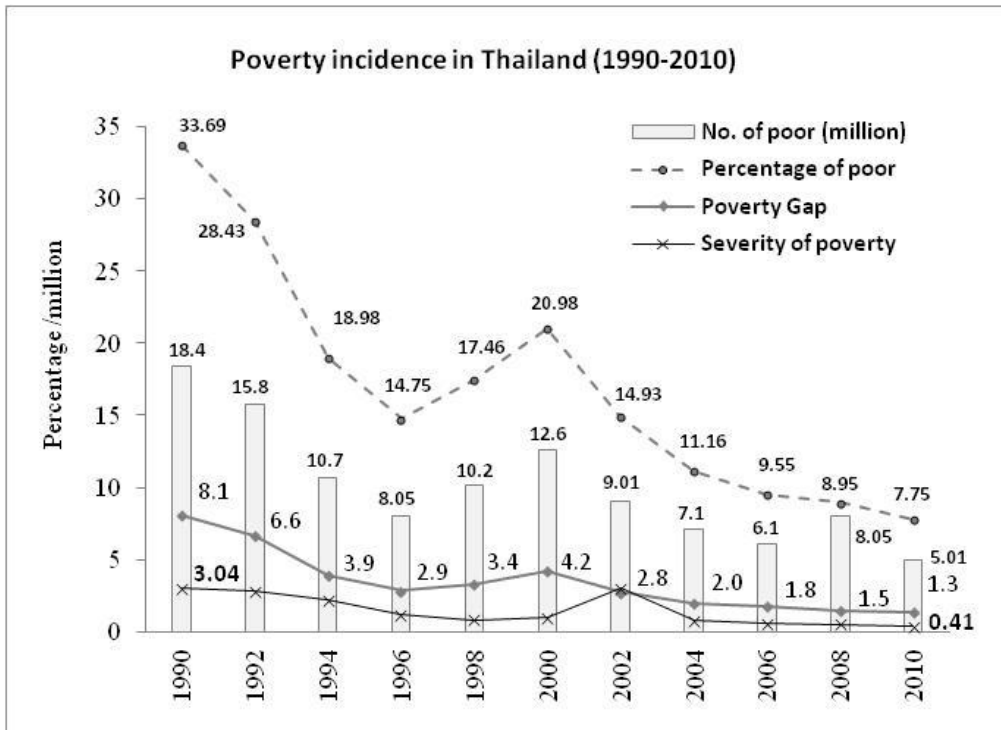
The alleviation of poverty is a major national agendum in Thailand and it has been studied extensively to put policies into place to deal with poverty over many years. Thai Government has taken several steps to raise the profile of the poverty issue. Tackling poverty and promoting pro-poor growth is also a high priority in the Ninth National Economic and Social Development Plan (2002-2006) (World Bank, 2001). Although, poverty index has declined significantly over the years in Thailand (from 21 to 8.5 percent between 2000 and 2007), there are still over five million Thai people below the poverty line and still at risk of poverty (UNDP, 2010). Nevertheless, one of the lessons of the economic crisis in Thailand in 1997 was that the high economic growth rates do not guarantee the sustainability and efficiency of economic development. Moreover,

*“...Thailand’s development path over the past four decades clearly indicates imbalance development from the perspective of regional and sectoral development, while success has been measured in terms of quantitative indicators. The question of social equity/justice and improvements in quality of life of most of the people residing in the country side seem to lag far behind as expected. This can be explained by weakness in economic, political and administrative management systems that are centralized and inefficient” (Government of Thailand, 2001).*

The percentage of poverty in Thailand had declined sharply from nearly 34 percent in 1990 to reach about 15% in 1996. Contrarily, the poverty has increased after the Asian economic downturn and reached to almost 21 percent in 2000. The objective of Ninth Plan (2002-2006) was guided by the philosophy of ‘**Sufficiency Economy**’ and people-centered development approach with the aims to achieve balance sustainable development and well-being of Thai people. It was claimed that, during the 9th plan period the growth rate of economy was 5.7% per annum. Interestingly, as economic recession start to stabilize or improving, the poverty ratio again start to decline and reached 7.5 percent in 2010 (Figure 3 and 4).

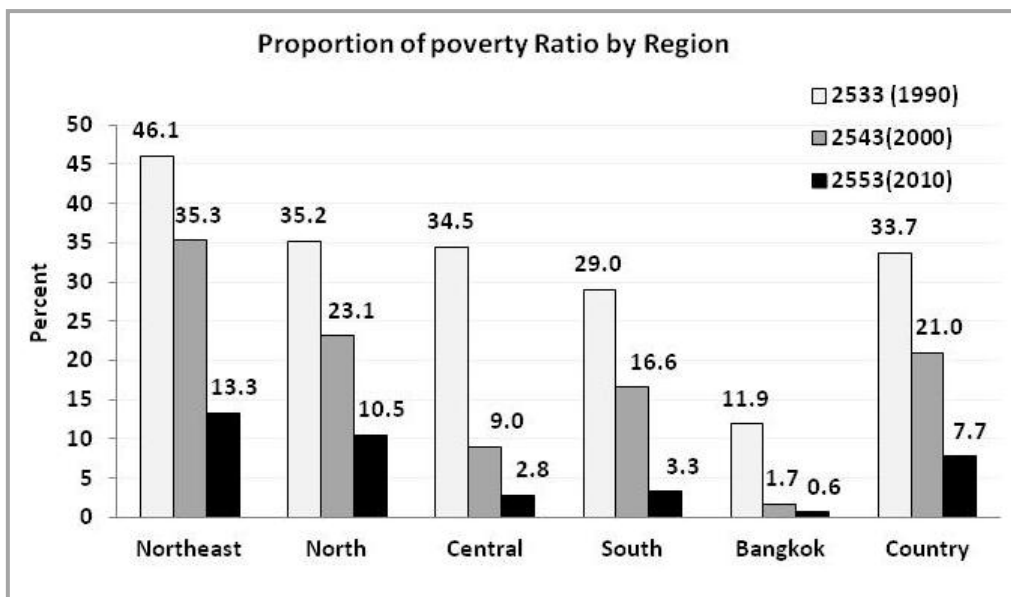
Although, poverty was fallen down and quality of life improved greatly as a result of economic growth and expansion, there is a considerable regional difference in both the level of poverty and the rate of poverty reduction over time. Historically, the Northeast region has been the poorest region in the country, followed by the North, Central, Southern region and Bangkok vicinity. For instance, in 1990 more than 46 percent of the Northeasterners were poorer as compared to nearly 12 percent in Bangkok (Figure 2) while by 2010, the incidence of poverty is more than 10 percent in both Northeast

and Northern region and more than 3 percent in south, but the poverty ratio was only 0.6% in the Bangkok.



**Figure 5. Proportion of population below the poverty line (expenditure basis)**

Data Source: Data from the Economic and Social Survey of households, NSO.



**Figure 6. Regional variation of poverty ratio (expenditure basis) in various years**

Data Source: Data from the Economic and Social Survey of households, NSO.

To sum up, the Thai economy remains vulnerable to external instabilities and persistent over poverty, income inequality and income distribution, quality of education, security of life and property are the challenges that need to be addressed taking account of globalization (Government of Thailand, 2006). Thus, His Majesty the King's Sufficiency Economy philosophy is brought as the basis for community members to carry out and participate in community activities which lead to the happiness brought about from balance, reasonable moderation, and a good safety net, enabling people to rely on themselves.

### 5.3. Household income, poverty and income inequality in the Study area

In accordance with household survey, the monthly average household income is highest in the urban area (THB<sup>3</sup> 39,188) followed by rural area (THB 38, 609), while lowest in the semi-urban area (THB 33,294). The average household size is 3.73 persons with monthly per capita income of THB 11,433 (Table 1). Interestingly, the monthly average household income is greater in the rural area than the semi-urban areas. This might be due to good price of Para rubber and other agricultural commodities complimented by high accessibility option of Asia highway and its network.

TABLE 1: Descriptive statistics of the household level income (THB)

Location	Total Number	Mean Income	Std. Deviation	Std. Error	Minimum	Maximum
Urban	77	46614.89	42362.88	4827.69	10000	300000
Semi-urban	86	33293.67	36794.36	3967.63	10000	275000
Rural	112	38609.13	24190.39	2285.77	8000	175000
Total	275	39188.45	34370.932	2072.64	8000	300000
Household size	1026	3.73	-	-	1	8
Average per capita income		11,433				

Source: Household Survey 2010

TABLE 2: ANOVA table of household income by spatial location types

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.273E9	2	3.636E9	3.126	.045
Within Groups	3.164E11	272	1.163E9		
Total	3.237E11	274			

Meanwhile, the results of the analysis of the variance (ANOVA-one way) of the mean income of the households' in accordance with spatial location namely, urban and

<sup>3</sup> THB= Thai Bhat and 1 US \$ = approx THB 31.00

semi-urban area is significantly different at 5% level of significance (Table 2). Additionally, the multiple comparison Tukey HSD test also confirms that the mean household income is significantly different in accordance with location type (Table 3). However, the mean income of households between rural and urban and rural and semi-urban area is not significantly difference. Therefore, we can argue that good accessibility along the Asia Highway and its network might cause to fetch the higher prices of agriculture commodities in the rural area and consumer surplus due to easy mobility of factors of production in lower cost.

TABLE 3. Multiple Comparisons Tukey HSD test for household income by location

(I) location type	(J) location type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Urban	Semi-urban	13321.22*	5351.15	.036	710.62	25931.82
	Rural	8005.76	5049.22	.254	-3893.31	19904.83
Semi-urban	Urban	-13321.22*	5351.15	.036	-25931.82	-710.61
	Rural	-5315.45	4890.148	.523	-16839.66	6208.75
Rural	Urban	-8005.76	5049.22	.254	-19904.83	3893.31
	Semi-urban	5315.45	4890.15	.523	-6208.74	16839.66

\*The mean difference is significant at the 0.05 level.

The official poverty line for the Songkhla province is THB 1,654 per person per month (per day THB 55.00, that means approx. US \$ 1.75 or more) in the year 2010 (Thai year 2553). This poverty threshold is quite higher than the international poverty measurement line i.e. US \$ 1 or 1.25 per day. As per the given poverty threshold, the incidence of the poverty in the survey household data is very low and the head count poverty ratio is 1.17%. The official statistics of the proportion of poor in Songkhla is 2.01% in 2010<sup>4</sup>. Therefore, our result is comparable and since we concentrated along Asia High way and the incidence of poverty might be lower than the other part of the province. However, the income inequality in the province is higher and the income inequality ratio of the overall sample household cases is more than 36 percent.

TABLE 3. Income inequality among the households by location

S.N.	Location Type	Gini Ratio (Area under Lorenz Curve)	Gini Ratio (Covariance)
1	Urban	0.4329	0.4471
2	Semi-urban	0.3507	0.3608
3	Rural	0.2963	0.2998
Total Sample		0.3607	0.3636

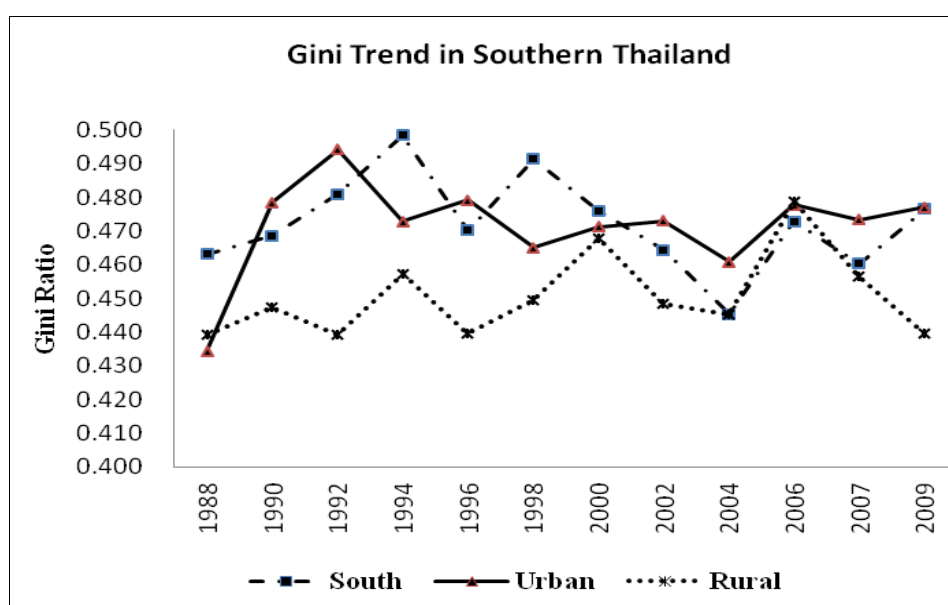
Data source: Household Survey 2010

The income gap among the sample household is highest in urban area followed by semi-urban area. The Gini ratio for the former is more than 44% and more than 36%

<sup>4</sup> Source: <http://social.nesdb.go.th/SocialStat>

for the later. The income inequality in the rural area is considerably low as compared to the urban and semi-urban locations (Table 3). Therefore, the policy needs to for addressing the issue of income inequality in the province.

The historical trend of Gini ratio in the southern Thailand is depicted in the Figure 5. The figure reveals that the income inequality is higher in both in rural and urban areas and Gini ratio is more than 43% since 1988 both in rural and urban area. Likewise, both the urban and rural income inequality in the southern Thailand has increased sharply in between 1988 to 1992 and after then the rural income inequality is in oscillating decreasing trend while the urban income inequality showed somehow constant trend since 1994. Contrarily, our survey results showed that the Gini ratio in the rural area is considerably low and it is nearly 30% and for overall sample 36%. The reduction of the Gini ratio in the study area might be due to induced economic activities after the introduction of Asia Highway and its network.



**Figure 5. Historical trend of income inequality (Gini ratio) in the Southern Thailand**

## 7. Conclusion

Most literature argued, poverty is deprivation in human well-being. Probably, broad approach to well-being and poverty focuses on the capability of the individual to function in the society as noted by the famous great Nobel literature Amrtya Sen in his 'Capability Function Philosophy'. Therefore, poverty and income inequality need to be investigated periodically to impose the effective policy.

Poverty reduction is a primary goal of development policy and incidence of poverty in Thailand has been decline from more than 33% in 1990 to 7.5 % in 2010 in parallel with economic growth. However, the number of people under the poverty thresholds is still considerably high and more than 5 millions of population is in below the poverty line in 2010. Alternatively, regional disparity in poverty ratio is prominent and higher

incidence of poverty is prevailed in the Northeast and Northern region. The southern region has considerable low level of incidence of poverty (3% in 2010) except Bangkok. However, the income inequality is considerably higher in the South and in the Songkhla province.

The data for this study was collected during July-November 2010. The survey results showed that agriculture constitutes the highest share of households' income (27 percent) followed by business sector (nearly 25 percent) and service sector (nearly 24%) respectively. Moreover, the incidence of the poverty in the study site is very low and the head count poverty ratio is 1.17%. However, the income inequality in the province is higher and Gini ratio of the overall sample is more than 0.3636. The income gap among the sample household is highest in urban area followed by semi-urban area. The Gini ratio for the former is more than 44% and more than 36% for the later. The income inequality in the rural area is considerably low as compared to the urban and semi-urban location. Therefore, the policy needs to be addressing the issue of income inequality in the province.

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