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The Relocation of Industrial Activities as an Instrument for Regional Development in the Northeastern Region of Thailand

Ludo Cuyvers¹
Philippe De Lombaerde²
Danny Van den Bulcke³

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¹ Faculty of Applied Economics, Centre for Asean Studies and CIMDA, University of Antwerp (RUCA), Middelheimlaan 1, 2020 Antwerpen, Belgium (Fax +32.3.218.0652).

² Formerly Graduate School of Business Administration, National Institute of Development Administration (NIDA), Klong Chan, Bangkok, 10240 Bangkok, Thailand (Fax +32.662.374.3282); and University of Antwerp (RUCA).

³ Institute of Development Policy and Management, and CIMDA, University of Antwerp (RUCA), Middelheimlaan 1, 2020 Antwerpen, Belgium (Fax +32.3.218.0666)

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1. Introduction

Whereas Thailand has experienced fast economic growth in the recent past, it has not been spared from some specific growth pains. Growth has been excessively concentrated, especially in Bangkok, resulting in population and in-migration pressures, socio-cultural problems, pollution, etc.. Because of this concentration, other regions in the country have not equally shared in the benefits of growth. Many rural areas continued to be plagued by poverty, out-migration, etc.

The Northeastern region is the most striking example of these peripheral regions. It covers the following provinces: Nakhon Phanom, Sakon Nakhon, Nong Khai, Udon Thani, Loei, Mukhadan, Yasothon, Ubon Ratchathani, Kalasin, Khon Kaen, Maha Sarakham, Roi Et, Buri Ram, Si Sa Ket, Surin, Chaiyaphum, and Nakhon Ratchasima. The region covers about 105.5 mio rais¹ and has a population of about 20 mio people.

The problem of the relatively backward Northeastern region of Thailand is basically one of how to bring these provinces closer to the average Thai development level. At the same time, the problem is also of reducing or reversing to some extent the intra-national migration flows as a consequence of labour surpluses in the North-East on the one hand, and the attractiveness of the Bangkok area on the other hand. Therefore, instrument variables can broadly be divided into two groups:

- variables that stimulate industrial activities in the North-East and/or are able to relocate existing activities to this region,
- variables that influence the migration decision of potential new migrants away from the North-East and/or that succeed in producing remigration back to the North-East.

Considering relocation and/or remigration one tends to think in terms of reversible processes: if enterprises would be offered the appropriate incentives (of the same nature as those that determined their decision to locate in the first place), they would be willing to relocate; if migrants would be offered the opportunities they were seeking when they migrated, they would be willing to remigrate. To our understanding such an approach is somewhat over-simplifying the problem, however. First, it implies perfect knowledge of the location or migration determinants. These are usually rather complex and economic, social, cultural, political, psychological and other factors are intertwined. Second, some of the location or migration decisions are simply not reversible or transferable for economic or other reasons (e.g. production location decisions for products with short product-life-cycles).

Third, even if there is reversibility, geographically speaking, this will usually not be the case economically speaking. From the point of view of the enterprises e.g., relocation will often imply at least some degree of technological up-grading, meeting higher ecological standards, etc.. From the point of view of the migrants e.g., workers formerly active in agriculture in the North-East that migrated to Bangkok to take up activities in the urban informal sector, remigration to the North-East will only happen if they can take up jobs in the formal industrial sector (with the status and the wages attached to it). One should also be aware that relocation of industries does not necessarily imply remigration.

¹ 1 Rai = 1600 m²

In Sections 2 and 3 we will discuss the theoretical starting points for analysing the problem, the methodological tools available for empirical research, and the relevant policy instruments. Section 4 provides some data on the socio-economic situation of the Northeastern region of Thailand. Finally, in Section 5 the recent analytical, policy-evaluating, and policy-prescribing literature on the migration and relocation debate related to the Northeastern region of Thailand will be surveyed.

2. Theoretical starting points and analytical tools

2.1 Labour supply and transfer to the non-agricultural sector

Some theoretical starting points that might contribute to the understanding of the problems described above can be found in the economic models developed to explain the transfer of labour from the agricultural to the industrial sector. Because of the spatial concentration of industrial activities this labour transfer will go together with migration. We refer to the so-called labour surplus models that build upon the development of formalised growth models on the one hand, and Nurkse's notion of "disguised unemployment" (Nurkse, 1953: 32-33), on the other hand.

Well-known models are these of Lewis (1954) and Fei & Ranis (1964). The central focus in these and derived models is the relationship between the mobilisation of marginally unproductive labour (in agriculture or other informal activities), the creation of savings and capitalist surplus, investment, and economic growth.

Shortcomings of these models include e.g., the exclusive emphasis on wage differentials as determinant of labour transfer, the assumed constancy of wages in the agricultural sector, no limits to the absorptive capacity of the capitalist (or urban) sector (Hakimian, 1990: 22) or urban environment, the conceptual problems related to the definition of surplus labour (e.g., the difficulty to deal with seasonal patterns) and the economic sectors no consideration of organisational aspects (Hakimian, 1990: 24).

The implicit optimism of these labour surplus models has later also been undermined by growing urban unemployment and under-estimated population growth rates. In fact, two developments coincided. At the policy level, attention to some extent shifted from industrialisation strategies to programmes of (integrated) rural development. At the theoretical level, there was an awareness that the modelisation of (rural-to-urban) migration was too simplistic thus far.

Todaro (1969; 1985: 260) made an important contribution by replacing actual wage differentials as key variables in the models by expected wages and permanent income, as explanation of rural-to-urban labour transfers, but the approach was still purely technical and the explanation of actual migration patterns unsatisfactory.

Because of the shift in policy objectives as already mentioned, the absorption capacity of the urban sector became an issue now. For this reason one should pay attention to other important factors. For instance, the pattern of relative prices, other than wages, is often biased against agriculture

(Griffin,1976; Oberai,1983:2-8), which causes investment and technological changes to be biased as well. Imported farm technologies, adapted to labour-scarce countries will often limit labour absorption in agriculture, together with capital market imperfections, favouring large land-owners. It therefore became clear that social and institutional factors such as the distribution of land-ownership e.g., also needed to be taken into account, as skew distributions tend to decrease the labour absorption capacity of agriculture (Oberai, 1983: 4; see also: Barraclough, 1970). It should further be observed that infrastructural, social, and trade policies often favour urban areas, adding to their attractiveness (on urban bias, cfr infra).

2.2 Migration in a multi-dimensional context

The economic approach outlined in the previous section, is able to explain rural-to-urban migration. Empirical tests of migration functions, following Todaro's approach, have been performed e.g. by Greenwood (1971) with data for India, and Speare (1976) with data for Taiwan. Hakimian (1990:36-) argues however that the neo-classical models, as mentioned above, are not able to explain satisfactorily the dynamics of the labour transfer process between agriculture and industry or the elements leading to the decision-to-migrate. He stresses the importance of the structural context in which migration takes place and argues that structural changes of property relations, rural transformations, the social division of labour, the crop culture, gender relations, etc. should be studied. The author considers two (general) fundamental models: the dissolution/se-paration model leading to a permanent labour transfer² and the involution/preservation model with the relationship between labour and the means of production not completely broken, but rather modified. The latter model distinguishes two forms of labour transfer : a circular form with periodic movements between the urban and rural sector and dual residence, and a seasonal form with temporary labour sales to the wage labour sectors.

Present-day understanding of migration stresses the rationality of the migrant's decision, though it is not taken independently from the socio-economic context on the production relations (for a survey, see e.g., Shrestha, 1987). It is a synthesis of the so-called "conventional school" which views migration as an expression of a free choice, and the critical neo-marxist school, with migration as a systematic process within a given historical and economic order, where the migrant's motivations play a minor role. Present-day views take also the sociological and political context (i.e. the institutional context) into account and stress the heterogeneous character of the migrating population. The "material base" of migration (economic disparities) is generally acknowledged, along with the recognition that migration is not only a result but also a cause of disparities.

Worth mentioning here is also the interesting research note of Winchie & Carment (1989) which points to the methodological problem that most of the empirical research on the migrant's motivations is based on aggregate data or retrospective questioning (resulting in ex post rationalisations). According to Winchie and Carment, this would lead to an over-estimation of the economical factors in the migration decision and an under-estimation of e.g., non-monetary career reasons.

Not much theoretical work seems to have been done on the issue of intra-national remigration. Policy-makers could, however, benefit from the existing theoretical framework for analysing inter-national return migration. In his review of the literature, Tassello (1986:199-212) considers three major contributions in this field.

- the functionalist approach, stressing the social mechanisms, with power and prestige as central concepts, in a system where socio-economic laws are evolving towards equilibrium,
- the conflict approach, stressing specific political, demographic and economic circumstances and problems, with migrants as the population category which is used to solve the problem or which is the victim of the circumstances,
- the migrant's aspirations approach, stressing the migrant's psychology in his aspirations and frustrations.

A more practical approach to the problem is conceptual or typological. Tassello (1986:122-123) considers the following possible typologies: the temporal classification (occasional returns, seasonal returns dictated by labour contracts, temporary returns at the end of a working contract or for personal reasons, permanent return after a final decision), the migrant's intentions typology (emigrants intending to return and actually returning; emigrants intending to return but not returning; emigrants not intending to return but actually returning), and the typology based on the results of return migration (return of failure, return of conservatism, return of retirement, no return; cfr. Cerase, 1974). Other types which have been distinguished include: transilient (i.e. very mobile) migration, circular migration (within a culturally defined area and implying repeated returns), and ancestral return migration.

Empirical and testable models can be divided into models that explain aggregate migration flows or that attempt to explain the individual migrant's decision, respectively. Chronologically, the development of the former preceded the development of the latter (Greenwood, 1985). Empirical models that test the role of the educational level in the migration decision, include: Levy & Wadycki (1974) and Schultz (1982). According to our information, no specific empirical models have been designed to study remigration explicitly.

2.3 Industrial location and relocation

The theoretical literature on industrial location is based on Weber (1929), Greenhut (1952), and Moses (1958) and views the location problem as an optimisation problem, where profits have to be maximised, basically by minimising all costs involved (costs which are related to the inputs in the production process, the production itself, and the marketing of the production). More recent contributions altered or relaxed the underlying assumptions of the Moses model (for a selection of these models, see e.g.: Pussarungsri, 1990).

Without government intervention, the costs that are considered in a location problem are basically transportation costs, and costs of production factors (which may geographically differ because of their limited mobility). However local, regional or national governments have a large number of instruments

² Market or institutional forces may be the predominant underlying mechanisms and the causes may be found in

at their disposal to influence the cost factors and therefore the outcome of the optimisation exercise (cfr. *infra*). It is worth noting that it has been shown theoretically (and empirically observed) that not only cost levels matter for locating a production unit, but that uncertainty in the input supply and the cost levels (availability of infrastructure, electricity, labour, ...) will act as a deterrent for new investment and/or for relocation of existing production facilities (Pussarungsri, 1990).

A more practical approach to the location problem is the check-list approach. Several authors have designed check-lists in order to assist the management of companies to decide on location or relocation of production units. Schemmer (1982) e.g., distinguished between a broader location decision and the locational choice (site selection). The location decision consists of the following steps : the recognition of future capacity shortfalls or surpluses, the consideration of all of the short-term as well as the long-term options for remedying any recognised capacity shortfall or surplus, a general decision on necessity and location of a new industrial site, and the actual site selection (Schemmer, 1982:xi-xiii). For site selection, he proposed a check-list of 41 variables, grouped under 11 headings: access to markets/distribution centers (2), access to suppliers/resources (2), community/government aspects (8), competitive considerations (2), environmental considerations (3), interaction with the rest of corporation (3), labour (5), the site itself (6), taxes and finance (6), transportation (2), utilities/services (2) (Schemmer, 1982: 31-41).

The decision to relocate, contrary to establish new firms, will depend on location-related characteristics of both origin and destination (push and pull factors). Usually the decision to locate a new branch plant is not independent of the location of the main plant, with disadvantages of locating near by (e.g., high costs related to scarcity of space or labour) and/or advantages of locating on another site outweighing obvious advantages of physical proximity of the different branch plants.

The difference between formalised approaches and check-list type approaches is basically that in the latter the weighting of the different criteria is not explicit and depends on the expertise and preferences of the entrepreneur, and that the criteria used include non-quantifiable criteria.

That subjective criteria also play a role in investment decisions has been shown by Bar-El & Felsenstein (1990). Their research into the potentials for rural industrialisation in Israel led them to stress the role of local (rural) entrepreneurship. Although conventional locational attributes might often show unfavourably for the rural area, local entrepreneurs may attach some subjective comparative advantage to location there. For specific types of industries (not relying on advanced infrastructure or highly-skilled labour), these subjective advantages may outweigh the objective disadvantages. The policy implication is that if objective criteria clearly favour the urban area for industrial investment locations (which is very often the case, except for some agriculture- or resource-based industries), and if the government is not able or willing (e.g. for political or legal reasons) to artificially alter the relative advantage of the rural locations (e.g. via tax preferences), the policy option might be the mobilisation of local entrepreneurs. In their study, Bar-El & Felsenstein added that differences in locational

preferences among local (rural) and non-local entrepreneurs, are not the result of incomplete information, but of a conscious choice on subjective grounds.

Empirical models on firm relocation are econometric and micro-economic (e.g. Carlton, 1983; Nakosteen & Zimmer, 1987) or aggregative (e.g. Coelen e.a., 1987). Contrary to human migration models, the former preceded the latter, and the literature seems rather scarce (probably due to a lack of data).³ The models are either similar to gravity models or are picturing a stock-adjustment process. The latter include not only attraction and resistance factors (in origin and destination) but also moving cost factors, and usually consider both real transfers of existing units and the setting-up of new plants. The models may include economic factors (e.g., wage levels, market size, labour force, distance, etc.) as well as non-economic factors (e.g., social stability, environment, etc.). The relationship between relocation and policy instruments is of particular interest.

2.4 Industrial relocation and human migration

The interrelationship between (re-)location of industries on the one hand, and (re-)migration on the other hand is less straightforward than it appears at first sight. Of course, job-creating rural investment projects will normally have a negative effect on out-migration (although possibly a positive effect on migration to new local industrial centres), and potentially a positive effect on remigration. However, some comments are in place.

First, although the availability of cheap labour might be an important criterion for a company to consider locating in a rural area, the training of the manpower is equally important. As companies are often not in a position to take care of training, there is an essential educational role to be played by the government.

Second, if an investment decision relies on the condition of remigration of local workers, potential remigrants and investors may find themselves confronted with a dilemma: workers do not remigrate because the jobs are not there, investors do not invest because the workers are not there. Also in such a situation there is an obvious and important role for government intervention a.o. for reducing uncertainty of the economic actors by providing a medium term planning framework, by making commitments on infrastructural investments, and by playing the role of intermediary between the parties in order to obtain commitments from their side.

Third, one should be aware of possible perverse effects of rural industrialisation policies on intra-national migration flows. Based on empirical studies of migration policies in India and Malaysia, Bose (1983) and Chan (1983) pointed out that when workers acquire technical skills they will become more interesting candidates for migration to the metropolitan area, and policies attracting workers to rural industrial centers might make the step-to-migrate to the metropolis psychologically easier.

³ Other statistical investigations (for the UK) include : Sant (1975); Moore & Rhodes (1976); Ashcroft & Taylor (1977); Moore, Rhodes & Taylor (1986); Twomey & Taylor (1986); Taylor & Twomey (1986).

3. Incentive schemes

3.1 Instruments for remigration policies

Although migration to urban areas can obviously have a positive effect on economic development, providing a pool of labour for industrialisation and supporting activities, there are limits to the absorption capacity of the cities. If negative effects (such as unemployment, inadequate and insufficient housing and infrastructure, etc., and resulting social problems) outweigh the positive effects, or if urban migration leads to labour shortages elsewhere and therefore under-utilised scarce resources, governments may consider so-called remigration policies.⁴

The instruments available for these policies, unlike these for the relocation of industries, will take the potential remigrant as the target, rather than the economic activity, which is not always the sole factor of influencing the migrant's decision to move. However there is room for questioning the desirability of government incentives here. Government intervention might be inefficient and/or ineffective, or conflict with individual rights (e.g. when migration is forced). Good arguments in favour of these policies are, however, the existence of negative external effects of over-concentration or under-utilisation of scarce natural resources.

Following Oberai (1983:11-26), direct and indirect remigration policies can be considered. Direct migration controls prescribe the residence and the movement patterns of citizens. The policy instruments include legal and administrative controls and police registration (to enforce e.g. bans on rural-to-urban migration, travel restrictions, etc.) and resettlement programmes. Examples of direct migration policies can be found in China and Indonesia. Indirect migration controls include programmes to redirect migrants to other areas (land settlement schemes, growth pole and dispersed urbanisation strategies), to reduce the flow of migrants (rural development programmes, "nativist" policies), and to influence urban in-migration.

Another typology of policies is offered by Shrestha (1987:335-339), who distinguishes between re-direction of migration (via regional development and growth centres, land resettlement) and retention of potential migrants (via rural development and urban barriers to migration). Retention of potential migrants could be regarded as an anticipating remigration policy aimed at reducing future migration.

Before considering any policy instrument towards remigration, the policy-maker should have a purpose-built monitoring system at his disposal, which should provide the necessary information on the socio-economic situation of the potential remigrants, their value-system, and their decision-making processes. The need for these monitoring systems has also been recognised in relation to the reintegration of workers returned from abroad (ESCAP,1986).⁵

⁴ On the resettlement experiences in Malaysia, Sri Lanka and Nepal, see e.g. Chan (1983), Indraratna e.a. (1983), and Kansakar (1983), respectively. On the migration influencing policies in India and Indonesia, see Bose (1983) and Perez-Sainz (1993), respectively.

⁵ For examples of purpose-built monitoring systems we refer to Korale e.a. (1986) for Sri Lanka, Ro (1986) for South-Korea, Go (1986) and Paganoni & de los Reyes (1986) for the Philippines, and Roongshivin, Piyaphand & Suraphanich (1986) for Thailand.

3.2 Instruments for the relocation of industries

Instruments that are able to influence the locational decision of the firm can be divided into two broad categories of economic and tax incentives (see e.g., De Lombaerde, 1992). Economic incentives include financial benefits such as cash grants, interest subsidies, research grants, training subsidies, employment rebates, adequate merger and joint-venture regulations, industrial facilities and infrastructure, and other "invisible" incentives (subsidised electricity price, ...). Tax incentives include exemptions or deductions from corporate income tax, real estate tax or capital registration tax, tax-free mergers, etc. Tax deductions may take the form of accelerated depreciation rates.

The co-existence of several of these incentives necessitates combination rules. Usually these incentives will be designed in order to meet certain policy objectives (e.g., the authorities granting advantages conditional to employment or export targets). By modulating these incentives geographically, they can be used as instruments of regional policy. Usually incentives are restricted to so-called "zones" : employment zones, development zones, reconversion zones, etc. In a number of cases, market failures in rural credit markets can be considered as an economically valid justification for government intervention and regionally-specific policies.⁶

Apart from explicit regional policies, aimed at promoting industrial activity in rural areas, one should be aware of the existence of (urban) biases in other, not necessarily related policy measures. The final outcome in terms of activity levels in urban versus rural areas will be the result of the complete policy vector.⁷ Therefore, reversal or elimination of these biases might be an efficient and necessary policy option. On the experience of shifting from an urban to a rural bias in Taiwan and South-Korea (and the political processes involved), we refer to Moore (1993).

4. Some data on the economic situation of the Northeastern region of Thailand

In this section a number of development indicators and indicators of resources availability will be presented, focussing on the relative position of the Northeastern region in relation to the other regions in Thailand. The indicators are used in such a way that relative scores of the region are related (a) to its attractiveness as a destination for the relocation of industrial activities, and (b) to its attractiveness to remigrate to.

Table 1 shows a set of indicators. A number of indicators will influence the (re-)location and remigration decisions in the same way, positively or negatively. Other indicators contain conflicting information for potential investors and potential (re-) migrants.

The left-hand cells of Table 1 show indicators which might influence entrepreneurs to (re-) locate industrial activities to the North-East. These include: relatively low land prices, and the high

⁶ Besley (1994) offers a discussion of possible types of market failures in rural credit markets, such as the scarcity of collateral, underdeveloped complementary institutions, the importance of covariant risk and segmented markets, the occurrence of loan repayment enforcement problems, imperfect information, market power, and the need-to-learn to use financial markets.

percentage of available non-forest land (which are possibly also elements of attraction for some categories of potential remigrants), and the availability of six airports (cfr. Table 6).⁸ Industrial location in the North-East, to a relatively smaller extent seems to face the environmental dilemma of having to give up forest area for developing industrial sites. In addition, an important share of the remaining land is of poor agricultural quality (Siam,1993:36).

Table 1: Development indicators for the Northeastern region

Relation to the remigration decision	Relation to the relocation decision	
	Positive	Negative
Positive	low land prices high % of non-forest land	high % of Northeasterners among Bangkok immigrants
Neutral	airports	limited local management capacity shortage of labour with vocational training shortage of labour with secondary or higher education low degree of experience of labour in manufacturing low road density locational disadvantage vis-a-vis Bangkok and Eastern Seaboard
Negative	low average monthly income high unemployment ratio high seasonal inactivity ratio large labour pool	high poverty incidence low average monthly expenditures high dependency ratio shortfalling electricity supply water shortages

The other indicators in these left-hand cells are likely to have the opposite effect on remigration. Included are : the low average monthly income (Table 3)⁹, the existing labour reserve, and high unemployment and seasonal inactivity ratios (Table 2).

Table 2: Labour force (1991)

	Thailand	Bangkok	Central	North	Northeast	South
Labour force (x1000)						
Total employed persons	30775	2994	6992	6406	10429	3954
Seasonally inactive	909	2	121	192	568	26
Employed persons	29866	2992	6871	6214	9861	3928
Unemployed persons	1460	144	249	234 ³	747	86
Looking for work	346	105	97	35 ³	71	38
Not looking but available	1114	39	152	199	676	48
Ratios(%)						
Unemployed / labour force	4.5 ³	4.6	3.4	3.5	6.7	2.1
Seasonally Inactive / employed	3.0	0.1	1.7	3.0	5.5	0.7
Percentage shares						
Unemployed among regions	100	9.9	17.1	16.0	51.2	5.9
Seasonally inactive among regions	100	0.2	13.	21.	62.	2.9
Share of employed in manufacturing(%)	7.1	25.9	12.3	3.7	1.8	4.2

Sources : Estimation of Structure of Labour Force and Employment (Department of Labour,1991); Advanced Report 1990 Population and Housing Census (NSO).

⁷ For a recent survey article on urban bias, see : Varshney (1993) and the comments by Bates (1993) and Lipton (1993).

⁸ These six airports are located in: Khon Kaen, Ubon Ratchathani, Loei, Udon Thani, Sakhon Nakhon, and Nakhon Ratchasima.

⁹ Data from samples of villages in several Southeast Asian countries indicate that rural incomes in Thailand show a relatively high share of income from non-farm self-employment, but that wage-employment in non-farm activities as a percentage of total employment is relatively low (Koppel, 1989:40).

The indicators in the right-hand cells of Table 1 are likely to discourage (re-) location of industries to the Northeastern provinces. The first indicator is the percentage of northeasterners in the total of Bangkok immigrants, which was 44% in 1990 (Table 4). From the investor's points of view such a high percentage share will indicate the absence of the most active and skilled workers in the region and the region's general unattractiveness. On the other hand, the North-East is the destination with the highest probability for potential remigrants because of the share of the Northeasterners in the migrant population in Bangkok. It can be observed from Table 5 that the relatively important emigration from Isarn to Bangkok is a relatively recent phenomenon. Until the beginning of the 1980s the North-East systematically registered a below-average interregional migration share. This changed dramatically, however, with a massive emigration to the Bangkok area.

Table 3: Income and poverty incidence

	Thailand	Bangkok	Central	North	Northeast	South
Income (Baht) (1990)						
Average monthly income per capital	1371	3066	1478	1198	792	1142
Average monthly expenditure p.c.	147	2807	1447	1184	856	1123
Gross regional product (GDP at current market prices, Baht) (1990)	35643	106551	33683	20504	13145	25186
Poverty incidence (1987/88)	23.7	3.4	16.0	23.2	37.5	21.2
Villages	29.2	*4.1	19.0	25.1	39.9	24.0
Sanitary districts	13.2	*3.0	6.4	18.7	20.1	11.5
Municipal areas	6.7	*10.8	8.4	11.3	19.0	11.8
City core		3.3				

Poverty line (p.c. household income/year (Baht):

Rural (i.e. Villages & Sanitary districts) 4141

Urban (municipal areas) 6324

* Five Vicinity Provinces: Samut Prakan, Pattum Phani, Samut Sakhon, Nakhom Pathom, Nonthaburi.

Sources: Preliminary Report of The 1990 Household Socio-Economic Survey, NSO; Siam (1993:23,28); TDR (1991).

Table 4: Socio-demographic indicators

	Thailand	Bangkok	Central	North	Northeast	South
Average household size (1990).	4.1	3.7	4.1	3.8	4.5	4.4
Dependency ratios (%) (1990)						
Total	56.5	37.3	52.3	53.3	64.9	66.1
Youth (0-14)	45.1	29.2	39.5	40.4	54.4	53.9
Old age (60-)	11.4	8.1	12.8	12.9	10.5	12.2
In-migrants to Bangkok metropolis by region (%)	100	7.6	22.1	17.9	44.3	7.1

Sources : Preliminary Report of The 1990 Household Socio-Economic Survey (NSO); Siam (1993:22,23,55); Advanced Report of the 1990 Population and Housing Census; Survey of Migration into the Bangkok Metropolis: 1988 (NSO).

Indicators with a rather neutral effect on the decision to remigrate include: the limited local management capacity (Siam, 1993:69, 70; Arya, 1990:11), the shortage of labour with vocational training or secondary/higher education (Siam, 1993:68,69), the small experience of the labour force in manufacturing (Table 2), the region's low road density, and its locational disadvantage vis-a-vis the Bangkok Area and the Eastern Seaboard. The low road density (Table 6) is basically due to the extensiveness of the region. It masks a rather adequate network for road transport with five national highways : Nakhon Ratchasima - Nong Khai, Khon Kaen - Ubon Ratchathani, Udon Thani - Sakon Nakhon, Loei - Ubon Ratchathani, and Nakhon Ratchasima - Ubon Ratchathani. With respect to the relative locational disadvantages are concerned, one should take into account that with the ongoing opening-up of Laos (and the new Mekong bridges), Cambodia, Vietnam, and Southern-China, the

region might become more 'central'. Moreover, the Khongsibkhoa-Khangkhoy railway and Mukdahan-Laem Chabang highway will further improve transportation links with the Eastern Seaboard.

Table 5: Interprovincial migration by region, 1955-1988 (percentages)

	Thailand		Bangkok		Central		North		Northeast		South	
	W	B	W	B	W	B	W	B	W	B	W	B
1955-60	58	42		100	59	41	58	42	87	13	69	31
1965-70	54	46		100	54	46	62	38	77	23	75	25
1975-80	47	53		100	43	57	61	39	77	23	71	29
1979-84	44	56	32	68	41	59	55	45	39	61	62	38
1983-88	38	62	24	76	31	69	51	49	43	57	43	57

"W" = Migrants within the region; "B" = Migrants between regions. All figures are percentages; the figures for both categories necessarily add up to 100% (= total interprovincial migrants). For the periods 1955-60, 1965-70 and 1975-80, "Bangkok" does not include the five vicinity provinces; the "Central Region" excludes Bangkok. For the periods 1979-84 and 1983-88, the Central Region is defined as : Central Region - BMR.

Source : Ashakul (1989:6)

Indicators which discourage both relocation and remigration decisions are: the low expenditure levels (Table 3), the high poverty incidence (Table 3), the high dependency ratios (Table 4), the shortfaling electricity supply (Tables 6, 7)¹⁰, and water shortages (Table 6). The low expenditure levels are important to the extent that industries at least partly rely on local demand, which is according to Arya (1990:8,9), the case for provincial industries.

Table 6: Physical resources

	Thailand	Bangkok	Central	North	Northeast	South
Energy (1992)						
Energy sales by region (%)	100	65.6	19.2	4.7	4.7	5.8
Energy sales per person (kwh)	1243	6443	1350	294	165	568
Water (1991)						
Customers by region (%)	100	57.4	14.7	9.7	11.9	6.3
Water sales by region (%)	100	74.6				
Non-forest land by region (as a % of the regional total) (1988)	72.0		75.9	52.6	86.0	79.3
Road density (road distance/area) (km/sq.km)	11.0	0.24	0.14	0.09	0.08	0.12

Sources : Royal Thai Survey Department; Royal Forest Department; The Department of Highways, Department of Local Administration; Public Works Department; Siam (1993:11,38).

Table 7: Supply of Electricity (Megawatt per year)

Type of station	Location of station	Capacity
Hydraulic power	Ubonrattana Dam, Khon Kaen	25.0
	Sirinthon Dam, Ubon Ratchathani	36.0
	Chulaporn Dam, Chaiyaphum	40.0
	Hui Khum Dam, Chaiyaphum	1.3
	Nam Phung Dam, Sakon Nakhon	6.0
	Subtotal	108.3
Gas turbine	Udon Thani	15.0
	Nakhon Ratchasima	15.0
	Khon Kaen	242.0
	Subtotal	272.0
Steam turbine	Khon Kaen	113.0
	Grand total	493.3

Source: Siam (1993:16).

¹⁰ The situation might however improve in the near future, because of: the construction of the Salawin river dam, the possible exploitation of gas sources (Phuom, Numpong (2), Chonaboth, Kasertsombon, Yangtarad, Kuchinarai, Phupra, Srithath, Nongsung), and the importation of energy (electricity, gas) from Laos and Vietnam.

5. The development of the Northeastern region, migration and industrial (re-) location: the state of the debate

The existing literature and the experiences with development policies of the Northeastern region of Thailand are providing interesting elements for a better understanding of the problem and/or for a better formulation of policy recommendations.

5.1 Problem characteristics

5.1.1 Regional disparities and the primacy of the greater Bangkok area (GBA)

The primacy of the Bangkok Metropolitan Area (BMA) in Thailand is impressive, especially in comparison with the situation in countries comparable in terms of size, population and development level. More than in other countries, the location of Thailand's capital corresponds to both the geographical and the economical point of gravity of the country and to the natural gateway to the world markets. According to Douglass (1990b:6), the spatial polarization (clustering around the BMA and in the direction of Chonburi) is very unlikely to be reversed in the medium term.¹¹ In terms of industrial activity, the manufacturing output in Bangkok and surrounding provinces amounts to about 75% of the national total; the Central Region as a whole to 88% (Arya,1990:5). The concentration of industrial activities in BMA and the Central Region has increased over time.

Reliable prospects on rural urbanisation are difficult to establish because of the lack of statistical data. Pointing to trends in agricultural value added creation as the economic basis for urbanisation, and trends in agricultural employment, Douglass (1990b:7,8) concludes that there are no signs that indicate a rapid rural urbanization in Thailand, relative to the Bangkok area. However, he points to some exceptions like Nakhon Ratchasima, Khon Kaen and Udon Thani where automobile ownership growth rates, commercial construction activities and other indirect indicators point to rapid urbanisation. The available information, however, does not allow to attribute this to structural factors (rising prosperity, move to higher value added agro-related activities) or to short-term factors (e.g., government expenditure on infrastructure, peak in land prices in BMA, etc.).

5.1.2 Migration and remigration

Intra-national migration in Thailand is to a large degree of the circular type (fitting in Hakimian's involution/preservation model; see also the typology in tasello, 1986:123), not the least when female migration is concerned. Studies pointing to this circular characteristic and its implications (social safety nets, information flows, etc.) include: Goldstein e.a. (1977), Singhanetra-Renard (1981), Lightfoot e.a. (1983), and Fuller e.a. (1990).

¹¹ For a discussion of the urban primacy of Bangkok within the Thai nation and economy, see also: Sternstein (1984). On regional disparities in Thailand, see: Douglass (1990a) and Ichikawa (1990). The attraction of Bangkok on the population in the Northeastern region has been described a.o. in: Goldstein & Goldstein (1986) and Fuller (1990). This issue will be treated more in detail in Section 5.1.2.

Until presently, analytical and statistical research on intra-national migration in Thailand is not abundant. Ashakul (1989), using data from the 1988 Labour Force Survey¹², is probably the most important contribution in this area. The author constructed a mixed conditional/unconditional logit model¹³, a modification of the Todaro model (cfr. Sections 2.1 and 2.2), and estimated the probability for an individual *i* to migrate to destination *j* as a function of conditional variables (wage, probability of finding a job, travel distance) and unconditional variables (age and educational attainment, as proxies for the individual's preferences) (Ashakul, 1989:17-29). Some of the author's conclusions are as follows:

- the relative importance of inter-regional versus intra-regional migration, and also of urban-rural versus rural-rural migration, has increased in the 1980s, thereby continuing the trend (Table 5; and Ashakul,1989:Table 2.2);
- although Bangkok still shows a net inter-regional migration surplus, the outflow of migrants from Bangkok to its surrounding provinces, but also to the North-East, gained relative importance and showed a relatively rapid growth rate in the 1980s;
- interregional migrants are predominantly young and educated adults (Ashakul, 1989.:Table 2.3);
- emigrants from all regions except the BMA emigrated in response to better job opportunities; for emigrants from the BMA, spontaneous remigration is an important migration motive (Table 8);
- econometric research showed that wage differentials¹⁴, the probability of becoming an employee¹⁵, and education are significantly and positively affecting the individual's migration decision; geographical distance has the expected significant negative impact (Ashakul,1989:30-);
- the deterring effect of long-distance moves is stronger for the relatively less educated.

Table 8: Migration motives of migrants (eleven years old and over) by sex and previous region of residence

Sex & reason for migration	Previous region of residence					Total
	North	Northeast	South	Central	BMA	
Male						
Economic consideration	51.1	59.4	55.2	46.7	30.0	46.0
Looking for work	(33.2)	(51.5)	(44.6)	(34.2)	(15.3)	(34.2)
Official transfer	(17.9)	(7.9)	(10.6)	(12.5)	(14.7)	(11.8)
Education	5.0	2.8	18.8	7.0	1.2	5.7
Accompanying head of household	16.2	20.8	7.5	14.8	7.5	13.2
Back to former residence	22.3	8.8	12.8	23.5	46.9	26.0
Others	5.4	8.2	5.7	8.0	14.4	9.1
Female						
Economic consideration	33.9	45.7	29.2	36.7	16.2	32.3
Looking for work	(30.7)	(42.6)	(19.1)	(30.8)	(10.6)	(27.3)
Official transfer	(3.2)	(3.1)	(10.1)	(5.9)	(5.6)	(5.0)
Education	4.3	4.6	12.2	7.6	2.9	5.3
Accompanying head of household	39.4	38.3	38.2	31.9	28.1	34.4
Back to former residence	15.4	5.6	9.6	11.5	45.0	19.7
Others	7.0	5.9	10.6	12.3	7.8	8.3

Source : Ashakul (1989:13)

¹² The survey was based on a sample of 7426 females, and 6214 males aged 11 to 65.

¹³ See e.g. : Maddala (1983). Ashakul (1989:33-) also calculated the elasticities of the choice of migration decision to variations in wage, employment probability and distance.

¹⁴ Males turned out to be more responsive to wage changes than females, and young adults relatively more than older adults.

¹⁵ Females are rather attracted by jobs with secure wages than by high wages.

5.1.3 Rural industrial activities

Comparison between rural and urban (Greater Bangkok Area, GBA) industrial enterprises shows that the rural enterprises tend to have a smaller average size than those in the Central Region. (Arya,1990:6) They are also less diversified, i.e. mainly active in food processing, wood and wood products, non-metallic and metal products, machinery and transport equipment. Provincial industries tend to be relatively labour-intensive, import-independent and upstream resource-based. Competitiveness vis-a-vis companies in the Central Region (measured by regional specialisation indices) can only be discovered in food processing, certain resource based industries, and service industries. The Northeastern Region enjoys comparative advantages in the paper and the leather industry; the lower Northeastern region has comparative advantages in agricultural machinery and the production of rope (Arya,1990:6). Other industries with growth potentials are labour-intensive industries such as e.g., textiles and garment (Arya,1990:8).

Provincial industries tend to have stronger linkages with their immediate environment, both for inputs and for outputs. About 72% of raw material inputs of provincial companies come from within the region, 16% from the GBA, and 12% from abroad. In the GBA 39% comes from imports, and only 21% from the region. The local markets seem to absorb about 85% of total sales of small (< 10 workers) enterprises in provincial areas, gradually increasing with size (Arya, 1990: 7).

With respect to foreign-owned companies, Japanese FDI in Southeast Asia, has shown that for small sized foreign investors factors like political stability and hospitality, continuity of policies and availability and access to investment incentive programmes is much more important than for large foreign investors (Jung Taik Hyun,1989). The implication is that regional authorities should direct their investment promotion activities relatively more to small- and medium sized foreign companies. This is all the more relevant since in a number of sectors a trend seems to appear towards smaller-scale and more flexible production units (cfr. infra).

5.1.4 Explaining industrial location in the Northeastern region of Thailand

At the aggregate level, econometric analysis has shown that the variables that are significantly explaining provincial industrialisation levels in Thailand are: the provincial income level (i.e. demand), the size and density of the provincial population, the availability of adequate infrastructure (measured as cumulative expenditures on roads and the share in aggregate value added of electricity and water production), the degree of financial development, and the distance to Bangkok (Arya,1990:5).

The local demand variable is particularly important (Arya,1990:8,9). Its role should not be underestimated in this era of export promotion policies. Rural income is constrained by low productivity and low income levels in agriculture, related to some bias against this sector through pricing and tax policies. It is illustrated by the highly skew income distribution in favour of the Central Region.

A TDRI survey (based on an interview sample of 989 factories, of which 218 in the North-East) provided interesting information on the micro-economic decision-making process of local industrialists. The relative importance of familiarity with or subjective appreciation of locations came out very

strongly from these interviews. More than 50% of the interviewed located their business in or near their birthplace, which illustrates the role of subjective factors (cfr. supra) and these who located in other provinces generally did so on grounds of longlasting business contacts there (Arya,1990:11).

Another location determinant of economic activities in the Northeastern region seems to be the appearing of *corridors* and border developments, related to the gradual opening of borders with Laos and, to a lesser extent also Cambodia. A corridor is developing e.g. from Bangkok to the Lao border, and part of the investment uprise in and around e.g., Nakhon Ratchasima cannot sufficiently be explained without referring to this international phenomenon.

Given the set of parameters that determine investment location in the Northeastern region, one could expect that changes in these parameters (e.g., rising provincial incomes, widening rural-urban wage levels, improved infrastructure, etc.) in the medium term could cause a spontaneous re-distribution of industrial activities. Douglass (1990b:4) is rather pessimistic about this scenario and stresses that, given a highly mobile labour force, relative labour costs will probably only be a weak factor in diverting industrial investment to the North-East causing only a limited number of labour-intensive footlose industries to reconsider investment location decisions. And even in that case, investment diversion is more likely to be directed to the immediate hinterland of Bangkok than to the Northeast. As a potential by important factor, however, Douglass mentions the rapidly rising land prices in the BMA.

5.2 Policy evaluation and recommendations

5.2.1 Economic policies

In his overview of the research findings on economic policy issues in Thailand anno 1990, Yongkittikul (1990) identified only one contribution dealing with the spatial aspects of industrial policy, and mentions that only Tambunlertchai (1980) has shown the government's policy of industrial decentralisation to be unsuccessful.

As early as the Third Economic and Social Development Plan (1972-76), measures have been taken to stimulate rural industrialisation, mainly through investment incentives, and aiming at keeping in check the expansion of Bangkok (Arya, 1990: 9).¹⁶ The policies involved, systematically aimed at regionally modulating and lowering production costs. Although these policies seem to have been succesful on the macro-economic level, the wave of inward FDI (especially since the second half of the eighties), even strenghtened this pattern of centralised urban growth. The polarisation in the Bangkok area has not been stopped by the investment policies and certainly, the rural-urban gap did not narrow (Douglass,1990b:9).

¹⁶ For an overview of specific development projects that emerged in the recent past in the North-East, see: Siam (1993:75-). For an analysis of Thailand's relatively successful rural credit policy through the Bank for Agriculture and Agricultural Cooperatives (BAAC), see: Yaron (1994).

In his summary of the above mentioned TDRI study on provincial industrialisation, Arya (1990:9)¹⁷ states that more attention should have been paid to the demand side. This conclusion has been supported by studies indicating that most of the products of these rural industries show an income elasticity greater than one, and that - at least in a first phase - additional spending would be directed to relatively labour-intensive products with a relatively low import content (Granstaff,1990).

Other observations by Arya included:

- there is scope for a more active role of the government in directing more public demand to provincial output and in supporting the export capacities of these industries (Arya,1990:10,11);
- the relevant information dissemination to the economic agents is problematic as yet (Arya,1990:17);
- there are a number of pro-Bangkok biases in different policy areas (Arya,1990:19).

As far as policy recommendations are concerned, Douglass (1990b:9-) advocates an integrated "national urban development strategy", also including noneconomic elements. In Douglass's opinion, three general approaches should be covered in an integrated way :

"(1) inducing the diffusion or dispersion of manufacturing away from Bangkok and down the urban hierarchy via (a) restrictions on the expansion of the core region and/or (b) incentives to locate outside of Bangkok, usually through growth pole or growth center policies; (2) generating urban growth through rural development through increases in agricultural productivity and rural incomes, at local levels; and (3) re-direct migration and population expansion toward peripheral frontier areas" (Douglass,1990b:9).

As for the first approach, the author warns not to neglect the economies of scale related to the urban agglomeration in Bangkok, but argues that short-term inefficiencies of locating away from Bangkok might be outweighed by long-term macro-economic development gains, and that progress can certainly be made on the internalisation of negative external costs of industrial activities in Bangkok (e.g., better enforcement of environmental regulations) (Douglass, 1990: 9,10).

As for the second approach, the author argues that more attention should be paid to provincial urbanisation through rural and agricultural development, instead of exclusively concentrating on industrial projects. Only an integrated effort will be successful and sustainable. He expects only limited growth effects of the current industrial decentralisation policies. Raising incomes in the agricultural sector and the derived demand for non-food items are considered as an essential building block of rural urbanisation and industrialisation.¹⁸ In addition, there is evidence that the attraction of industrial investments (and retaining them) not only depends on investment incentives as discussed in Section 3.2, but to an important extent on the urban environment with different forms of collective consumption (higher education institutions, specialised health services, entertainment, etc.) (Douglass, 1990b: 11,16,17).

¹⁷ The different aspects of the research have been treated in detail in several reports : Douglass (1990a,1990b), TDRI (1990), Loha-Unchit (1990), Wiboonchutikula (1990), Granstaff (1990), Biggs e.a. (1990), Charcombut (1990), Aungsumalin (1990), Na Ranong (1990), Tambunlertchai (1990), Suphachalasai (1992).

¹⁸ See also : Grandstaff (1990).

The policy recommendations of TDRI are more elaborated and specific. The complete list is shown in Appendix I. The proposed strategies include:

- development of the agricultural and service sectors together with provincial industries;
- correction of policy biases;
- raising production capabilities;
- development of regional growth centres; and
- decentralisation of government authorities.

One of the striking elements in the list of recommendations of TDRI is the negative evaluation result of the utilisation of fiscal incentives for spatially dispersing industrial activities. According to TDRI, the losses of economic efficiency clearly outweigh the benefits of dispersion. In case the BOI still wants to pursue fiscal incentive schemes, TDRI suggests to replace the tax waiver with a subsidy, so that it becomes a public expenditure which is open to closer scrutiny by the government, the Parliament, and the general public (Arya,1990:32-34). TDRI would like to see the role of the government limited to the provision of social and economic infrastructure and the promotion of efficient factor markets.

Some reflections have been devoted to the question "Which sectors should be promoted for location in the rural provinces?" Douglass (1990b:5,13) mentions industries with low transportation costs relative to value added making air transportation cost-effective, such as e.g., the electronics component industry. He also mentions industries with large-size assembly-line production being gradually replaced by smaller-size production types of flexible specialisation, organised in industrial complexes, such as textiles, automobile, and electronics industries.¹⁹

Siam (1993:86-) mentions: (a) agro-industry²⁰, (b) industries relying on unskilled labour and services and on non-sophisticated technologies, and fitting in the socio-economic context of the region (e.g., basic metal industry, farm tools, simple automobile spare parts, garment factories, gems cutting, ornamental electric bulbs, ceramics, etc.), (c) industries requiring some limited technological input (e.g., simple electrical appliances, farm machinery, fabrics and textiles, dyeing, chemical products, leather products, rubber and rubber products, etc.). For geographical and climate reasons, tourism will not play an important role in a development strategy for the Northeastern region.

5.2.2 Migration policies

Migration studies that stress the circular character of the migration from the North-East to the Bangkok area, and the existence of networks of social relations which facilitate these migrations, often draw the pessimistic conclusion that because of these structural links with the metropolis, all efforts of industrial decentralisation will be difficult if not impossible (see e.g., Fuller e.a.,1990). However, the existence of permanent social ties between migrants and their region of origin, might also serve as a catalyst for remigration policies.

¹⁹ The author refers to recent trends in Japanese investment in Southeast Asia, where the size of the investments on average seems to decrease (see : Jung Taik Hyun,1989).

²⁰ We could add primary materials based industries: potash, salty rock, natural gas.

Population redistribution policies have been mentioned for the first time in the Fourth National Economic and Social Development Plan (1977-81) (Ashakul,1989). These policies have always been indirect migration policies, basically aiming at reducing migration to Bangkok, by decentralising industrial investment through investment incentives modulated according to zones.

Migration policies seem to be absent in the TDRl recommendations. Douglass (1990b:9) mentions re-direction of migration as a possible aspect of a strategy for the North-East, but he does not develop the argument. Related questions concerning optimal population policies in Thailand have been discussed by Sussangkarn (1992)

Some lessons can be drawn from the experience with the return migrants from overseas, which was studied by Roongshivin e.a. (1986). The most important recommendation from this study was that the government should play an important role in informing the migrant workers about job market expectations, costs involved, how to settle financial and administrative problems, etc. A returnee registration system was also advocated, as it would facilitate recruitment.

6. Conclusions

Because of considerations such as favouring a more harmonious geographical distribution of the wealth of the nation, reducing negative external agglomeration effects in Bangkok, easing the intra-national migration pressures, coping with the relatively limited absorption capacity of the agricultural sector, etc., the development of the Northeastern region through the creation of employment in industrial and service sectors has become one of the current issues of debate among policy-makers and policy-watchers in Thailand.

The situation of the Northeastern region has to be considered in relation to that in the other regions and to the development of the Bangkok Metropolitan Area (BMA). From statistics and available research results we can observe *inter alia* the impressive primacy of Bangkok (also according to international standards), the continuing industrial concentration in the BMA, the relatively slow provincial urbanisation process (with some Northeastern centers as exceptions to the rule), the important migration flow of the relatively young and educated people from the Northeastern region to Bangkok (especially from the 1980s onwards), etc.

In general, most of the observers agree that the policies of industrial decentralisation and indirect migration have not been very successful in Thailand so far.

The decision to migrate and to remigrate are examples of multi-criteria-decisions. Not only economic factors play a role but rather a complex of social, institutional, psychological and cultural factors. However, regional economic disparities play a crucial role in remigration decisions and therefore, have to be assessed (wage differentials, cost-of-living differentials, etc.) in order to detect and analyse the economic remigration conditions. In addition, also other factors have to be studied (e.g., prestige, social ties, environment, etc.) in order to assess the feasibility of remigration policies based on material incentives, and re-integration issues should not be neglected.

A determination of the type of migration away from the Northeastern region (e.g., circular type) or of the approximate mix of types allows a more accurate formulation of the appropriate policy recommendations. However, on the role of government policies a considerable number of authors is rather pessimistic (e.g., the possible impact of institutional policies to reduce or to curbe rural-to-urban migration).

The company's decision-to-locate or relocate is more a result of "mere" micro-economic calculus. Not only cost levels, matter however. Input uncertainty is a determining factor, and local demand also plays a role. It should be further acknowledged that the subjective evaluation of rural locations by local entrepreneurs (following his *roots*) can be important.

It appears further that provincial industries are relatively small-size, labour-intensive, and resource-based. This should not be neglected by the government agencies concerned, especially because small companies are relatively more sensitive to government policies and investment climate than large companies.

From a policy point of view, a focus on investment incentives rather than on (re-)migration incentives is to be supported in cases where rural-to-urban migration of the circular type is important, like in Thailand. In this case, raising the income of the family that stayed behind would decrease the need for further migration and the supply of jobs in the region-of-origin would increase the attractiveness to remigrate. The incentive package which will be required to stimulate companies to locate in or relocate to the North-East should depend on an investigation of the relative importance that the management of potential investors attach to the different location factors. Eliminating pro-Bangkok urban biases in other policy areas will be an essential part of a strategy.

In order to avoid adverse effects of speculation in the land property markets, it seems advisable to build some degree of spatial dispersion into a policy of public investments in industrial infrastructure. Given the availability of labour (depending on the existence of local hidden unemployment and/or the pool of potential remigrants), the government will also have to play a role in the organisation of appropriate training. Moreover, there are indications that focussed efforts of industrial decentralisation do not lead to long-term structural development, contrary to strategies of regional clustering or regional networking. These integrated efforts involve several economic sectors and the provision of public goods (infrastructure, higher education and health services, entertainment, etc.), leading to provincial agglomeration and urbanisation, and stress spatial links and complementarities.

Finally, one should be aware of the relationship between (re-)location of industries and (re-)migration that is not always straightforward. The government should play a role in solving the dilemma of investment decisions depending on remigration (and vice versa), and the possibility of perverse results. From empirical analysis of migration decisions, it follows e.g., that keeping wages low and raising the educational level in the North-East as a policy to attract industrial investments, is likely to lead to more emigration from the region.

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Appendix 1: TDRI proposals for measures to stimulate rural industrialisation

Measure	Activity	Institution
Measures to neutralise policy biases		
Minimum wage rate	<ul style="list-style-type: none"> To decelerate the rate of increase in minimum wage To study minimum living standard To improve consumer price indices for low income group and rural household To abolish interest rate ceilings 	<ul style="list-style-type: none"> Ministry of Interior Office of the NESDB Dept of Business Economics The Bank of Thailand
Interest rates	<ul style="list-style-type: none"> To enact legislation allowing the bank of Thailand to have autonomy in monetary management To revamp the facilities such that only those for small-scale industries are in effect 	<ul style="list-style-type: none"> Ministry of Finance The Bank of Thailand
Rediscounting facilities	<ul style="list-style-type: none"> To widen the rediscounting margin To step up publicity of the facilities To avoid using fiscal incentives to disperse industries 	<ul style="list-style-type: none"> The Bank of Thailand The Bank of Thailand Office of the Bol
Investment incentives	<ul style="list-style-type: none"> To switch from tax incentives to direct subsidies To speed up town/city planning and to specify industrial zones 	<ul style="list-style-type: none"> Ministry of Finance & Bol Provincial Authorities
Infrastructure	<ul style="list-style-type: none"> To determine needs for infrastructure within the frame of industrial zones and city plans To consolidate needs for infrastructure and set priority for its construction To contrive sources of industrial water To set up customs facilities near large industrial areas and along the border To support the establishment of trucking carrier centres and inland container depots To deregulate tuition fees of both public and private schools and universities 	<ul style="list-style-type: none"> Provincial Authorities Office of the NESDB Dept of Mineral Resources & The Royal Irrigation Dept Ministry of Finance Office of the Bol Ministry of University Affairs & Ministry of Education
Pricing of public goods and others	<ul style="list-style-type: none"> To float prices of gasoline To improve the operation of provincial water works To apply one tariff rate for tap water for the whole country 	<ul style="list-style-type: none"> The National Energy Policy Office The Provincial Waterworks Authority Ministry of the Interior
Measures to promote production efficiency		
Greater access to financial facilities by small-scale industries	<ul style="list-style-type: none"> To create specialised financial institution for small- and medium-scale industries To enable SIFO to use SICGF facilities To adjust tax base for leasing business To set up regulation for the leasing operation To spread secondary education to the rural areas To encourage school-age children to continue their education at the secondary level To add a subject of understanding of working under industrial environment in the school curricula To produce more graduates in mechanics and engineering, with an emphasis on practical training To induce public learning institutions to provide services to the community, which include evening courses to upgrade labour skills, and projects on "factory in school" To expand projects on short-term vocational training and skill upgrading 	<ul style="list-style-type: none"> Ministry of Finance Ministry of Finance Ministry of Finance Ministry of Finance Ministry of Education Ministry of Education Ministry of Education Ministry of Education & Ministry of University Affairs Ministry of Education & Ministry of University Affairs Department of Labour & Department of Industrial Promotion & Department of Non-Formal Education
Manpower development	<ul style="list-style-type: none"> To instill knowledge of working in industrial environment to military enlisted personnel 	<ul style="list-style-type: none"> Ministry of Defense

Measure	Activity	Institution
	<ul style="list-style-type: none"> To extend coverage of training of industrial entrepreneurs to include those from small-scale and provincial enterprises 	<ul style="list-style-type: none"> Department of Industrial Promotion & Institute for Management Education & Chambers of Commerce & Federation of Thai Industries
Development of entrepreneur	<ul style="list-style-type: none"> To induce universities to play an active role in the training of entrepreneurs To set up training for new entrepreneurs 	<ul style="list-style-type: none"> Ministry of University Affairs Department of Industrial promotion & Office of the BOI
Dissemination of information	<ul style="list-style-type: none"> To expand the operation of the Rural Industry Information Service Center To set up information service unit within Provincial Industry Offices To index available information and services that the respective service institutions possess To publicize the institution and interesting industrial information through various mass media To set up a committee to coordinate and to plan on the dissemination of information and the provision of services 	<ul style="list-style-type: none"> Department of Industrial promotion Ministry of Industry All industrial promotion institutions Department of Industrial Promotion Office of the NESDB
Measures to create markets for industrial output		
Meeting between producers and buyers	<ul style="list-style-type: none"> To publish listing of manufacturers and associated information and to regularly update the information To establish permanent manufacturing product displaying centres 	<ul style="list-style-type: none"> Provincial Industry Offices & Provincial Commercial Offices & Provincial Chambers of Commerce Department of Industrial Promotion & Provincial Commercial Offices & Regional Chambers of Commerce
increasing purchasing power of consumers	<ul style="list-style-type: none"> To pursue structural adjustment in the production of agriculture and rural agricultural household To rehabilitate and improve tourist spots and attractions and to provide adequate tourist infrastructure To allocate budget such that more will be spent in remote provinces To disperse income to rural area through rural development projects 	<ul style="list-style-type: none"> Ministry of Agriculture and Cooperatives Provincial Authorities & The Tourism Authority of Thailand Ministry of Finance The National Rural Development Committee
Institutions and decentralisation of administration authorities		
	<ul style="list-style-type: none"> To enlarge the role of facilitation to prospective investors To modify the operation of Industrial Estate Authority of Thailand so that the regulatory and supervisory role is emphasized over its participation in the establishment of estates To equip Provincial Industry Offices with authority to approve licenses to establish factories and to create information service unit in the offices To expand operation of various Provincial Industrial Promotion Centers for a wider coverage of area and targeted industries To study consumer behaviour of rural population To adjust fees for the industrial operation To allocate budget to the locality in proportion to natural resources used in the production 	<ul style="list-style-type: none"> Office of the BOI The Industrial Estate Authority of Thailand Ministry of Industry Department of Industrial promotion Industrial Economics and Planning Division & Department of Business Economics Ministry of Industry Ministry of Finance

Source: Arya (1990).